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SOAP and SANITARY CHEMICALS

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AS THE EDITOR SEES IT

A NEW director of the Fats and Oils Branch at the Department of Agriculture took over the reins last month. We are going to offer him a word of advice, even though he has not asked for it and probably does not want it. Although the developments which inspire this comment predated his taking over the job,—a hangover from wartime days of secrecy,—we feel that they may affect directly the future conduct of the Fats and Oils Branch, and as such, are timely and pertinent.

Ever since the announcement last September of the heavy allocations of fats and oils for IEFC export for the fourth quarter, we have heard rumblings and grumblings from soapers, mostly smaller soapers. When we say that some of them are of the firm belief that there was an information "leak" at USDA at least three or four weeks preceding the announcement of the fourth-quarter figure, we are putting it charitably. They account for the heavy buying by large users for several weeks preceding the announcement by this explanation.

They state that there was a meeting at the USDA on this oil and fat situation back in August to which representatives of certain trade associations were *invited*, and that no representatives of the press, trade or otherwise, were *invited* or *attended*. They believe that this was a secret meeting, held for a select few,—and that the fat and oil user who did not happen to belong to a trade association represented at the meeting was thus excluded from information divulged by a tax-supported agency of the government.

And here is where our advice comes in. Don't let anything of this sort which can and does arouse suspicion, happen again. Open the doors to everybody, or keep them closed to everybody. Don't *invite* anybody to closed meetings where information on which could hang millions of dollars in market fluctuations might be involved. If meetings are to be held for an industry or group of industries, announce them openly in the trade or daily press well in advance. Make all announcements of allocations, policies, regulations, or other matters at the same time to everybody, the press included. If secret meetings strictly of government people are to be held, permit *nobody* from industry or other outsider to attend.

Over the next few years the way things are shaping up, we have a feeling that the oil and fat market, including export allocations if the Marshall plan goes through, is going to be a genuine "hot potato,"—a speculative powder keg. And until things return to a normal basis, if they ever do, the Fats and Oils Branch cannot afford to forget this fact for a single minute. Those American industries which depend on fats and oils as important raw materials have too much at stake for any serious blunders to be made.

That the new director of the Fats and Oils Branch about whose capabilities and reputation many fine things have already been said to us, will accept these blunt suggestions in the spirit in which they are published, we sincerely hope.

WHAT will be the impact of the Marshall plan on the soap industry if it goes through? More than a few soapers have been turning this question over in their minds and their conclusions are inclined to be a trifle disturbing. The Marshall plan is designed primarily to rehabilitate European industry, the idea being that if industry and agriculture are rehabilitated, the machinery for European recovery will be set up and put in motion. In rehabilitating Europe, the manufacture of soap will comprise a necessity. Obviously, their soap makers can be "rehabilitated" only if they are supplied with needed raw materials of which inedible fats and oils could be a not unimportant part.

Remembering the effect which the approximate half-billion pound figure for fourth-quarter IEFC oil and fat exports had on the price of tallow and other fatty raw materials in this market, the uneasiness of some soapers over the prospects of the Marshall plan is understandable. If the plan is adopted, substantial exports of inedible fats and oils over the next year or two could conceivably keep the American market in an almost constant state of turmoil. Soapers' costs would in all probability go up and stay up. High prices for soaps would become something of a permanent fixture, with the usual attending resistance to purchase and use. Competing detergents, particularly the synthetic organic detergents, the prices for which have been the very essence of stability compared to soap prices over the past two years, would be given an added market advantage.

No wonder exists that the average soaper if he weighs the possibilities under the Marshall plan is likely to be disturbed. He had dreamed back during the war of the days when the fighting would end and controls and allocations would go out the window. He had hoped for the day when the government would be out of his business. Now, faced with the prospect of the same thing with a different label for another two or three years, how can he be anything else but disturbed?

THOSE firms who market synthetic organic detergents are not unconscious of the possibilities of expanding their activities with their detergents if soap prices continue to rise and stay up. Realizing that the opportunity for a detergent product with a soap market based on twenty-cent tallow is better than in competition with soap pegged on twelve-cent tallow, we would not be surprised to see a speeding up of detergent marketing operations. Nor would we be surprised to see the sales emphasis switched over to the synthetics by those who market both soaps and detergents. Talk of another soap scarcity along toward the end of the year could add impetus to such a movement.

Although the present appears to be a rather auspicious time to turn on the sales pressure for products competitive with soap, we trust that the market will be spared a repetition of the flood of trashy detergents which marked the soap shortage two years ago. Most of those have fallen by the wayside. We sincerely hope that they stay there. Of course, today the circumstances are somewhat different. No acute scarcity of soap exists or is likely to exist. The true synthetic detergents of merit appear to be products which will stand up competitively. We believe that the public had its fill of the other kind.

ALTHOUGH protests against continuation of the three-cent excise tax on coconut oil and other lauric acid oils have bobbed up from time to time during the past two years in Washington, no apparent progress seems to have been made thus far toward removal of the tax. Today, the processing tax is an out-and-out penalty tax on the consumers of coconut, babassu and palm kernel oils. The original purpose of its adoption by Congress has long since disappeared. The money which went to the Philippines has since their independence been paid into the U. S. Treasury.

The American farmer and dairy industry for whose protection the tax was first conceived,—to protect them against cheap oils produced by low-wage labor in the Philippines and elsewhere,—no longer need such protection. In fact, we wonder if they know that the tax any longer exists and is still being paid mainly by the soap industry. As far as we can see, there will be no need for the tax for some years to come if we may judge by the current outlook.

Confronted as we are today by the prospect of higher cost oils and fats for soap manufacture, removal of this tax now would be at least one ray of sunshine among the black clouds on the raw material horizon. The usefulness of the tax no longer exists. Why then should it continue as a weight about the neck of those American manufacturers who are compelled to use these oils?

Liquid Soaps in Glass Containers

a discussion of the role of sequestering agents in preserving clarity of glass-packed liquid soaps

By Herbert Kranich
Kranich Soap Company

IN THE years prior to the advent of modern chemical processing in the liquid soaps and shampoos industry, manufacturers were often confronted with the annoying problem of clarity maintenance of such products packed in glass containers. Later, however, through proper formulation, water purification, mechanical refrigeration, de-stearinization, aging, specialized filtration, and the use of various chemical additives, the industry solved the problem of clarity maintenance with a considerable measure of success. Again during the war, when shortages of raw materials necessitated changes in formulations, and the quality of container products fell off, liquid soap manufacturers again found their products clouding and precipitating in glass containers. With raw material supplies now in better shape and time-tested formulas once again in use, the problem is still found to be not entirely solved, and investigation leads to the conclusion that the basic cause of the trouble originates in many cases with the glass containers in which the soap products are packed.

It is well known that variously formulated liquid soaps and shampoos, when properly manufactured, i.e., with minimum content of free alkali, unsaponifiable matter, metallic salts, protein matter, and other foreign residues, maintain a sparkling clarity for as long as two years when stored in steel tanks or clean steel drums. However, clarity is not maintained when the products are stored in tin-coated sheet steel cans or tin-lined drums. It was found that liquid potash soap products having a pH value of 9 to 10 will attack metallic tin, forming tin soaps and the black (stannous) and white (stannic) oxides of tin. The result is a cloudy product and the hydrogen liberated under such conditions has been known to cause the fading of dyes. Other metals have similar deleterious properties when used in making containers.

THIS paper supplements a discussion of the subject given by the author at the recent Chicago meeting of the Potash Soap Association, and answers some of the questions brought up in the technical session at which this paper was read. Mr. Kranich, one of the best informed figures in the industry on the manufacture of liquid soaps, is president of the Potash Soap Association.

The clarity behavior of liquid soaps and shampoos (stable in steel containers) put up in a variety of glass containers was investigated. The types of containers used were: pyrex chemical glassware, hand-blown glassware (Wheaton), milk bottles, distilled water bottles (green cast), commercial gallon jugs, cosmetic bottles of various makes, and a number of medicinal and prescription bottles. It was observed that the clarity of the product in these different types of glass bottles was extremely variable. Liquid soaps packed in pyrex glass, milk, hand blown and prescription glass bottles maintain their clarity for six months or longer. Liquid soaps in other types of glass containers show varying degrees of cloudiness or milky or red precipitates and gelatinous sediments. Some of the samples show clarity breakdown within two days when subject to accelerated aging tests where the product is kept at a temperature of 50°-55°C. for 48 to 72 hours with subsequent cooling to 4°C.

A significant observation in all the tests is that clarity breakdown eventually ceased. The liquid layer above the precipitated substance at specific temperatures is always crystal clear. If the clear liquid layer is decanted into another new bottle, a further breakdown of clarity with the formation of a cloud or precipitate may be observed in some cases. However, this secondary cloud or sediment is always of a lesser degree. A study

of the causes of secondary clarity breakdown brought to light the fact that the degree of glass erosion in the second container is related to the percentage of *ortho*-silicic acid found in the clear soap solution as a result of reaction with the first bottle used.

A number of glass bottles in which liquid soap had become cloudy were examined for evidence of etching. After the liquid soap contents were discharged, the bottles were carefully rinsed with distilled water and, without caps, were air-dried or oven-dried at a temperature of 100°C. Thin films on the inside of the glass bottles could be observed with the naked eye. When viewed by transmitted daylight, these films are multi-colored, similar to a refracted oil film on water. There is also a well-defined etched line indicative of the liquid level of the contents of the bottle. Above this etched line there is no indication of film. Liquid soap in such bottles invariably maintained clarity for long periods of time under both normal and accelerated aging tests. The conclusion drawn from these observations of liquid soaps, clouding in glass containers but remaining sparkling clear in steel containers, was that the glass containers themselves contributed definitely to the breakdown in clarity of the products.

These findings indicated the necessity for further study of the chemical composition and resistance to chemical erosion of commercial glass containers. Glass, a composition of silica, lime and soda, is produced by various manufacturers with wide formula variation of these three essential ingredients[2]. Three general types were studied: (a) chemical glassware (borosilicate glass), (b) milk bottles, prescription and hand-blown soda lime glass (approximate composition: lime, 12-14 per cent; soda, 12-14 per cent; silica, 71-73 per cent, (c) commercial machine-made glass bottles of soda lime glass (approximate composition: lime, 6-7 per cent; soda, 12-16 per cent; silica, 70-74 per cent). The first two types are excellent for maintaining clarity of properly manufactured liquid soaps. However, it is found that commercial machine-made glass bottles have deposited on their inner surface a thin film of salts of a rather complex nature (sulfates, carbonates, silicates, etc.) possibly deposited during the annealing process. This thin salt layer is a major source of trouble in the problem of clarity maintenance of liquid soaps. If a bottle is washed with a hot or cold dilute acid solution, hot water or wet steam, the layer of trouble-making salts is substantially removed. Liquid soaps in bottles so treated maintain relatively good clarity and stability. However, such procedure for washing bottles has not been generally adopted in the trade because packers have been disinclined to pay the additional cost of performing this operation. Packers claim that other types of products do not spoil when packaged in the same type of bottle and so the burden of clarity maintenance generally falls to the soap manufacturer.

Complaints of cloudiness in liquid soaps and shampoos are more prevalent in the fall of the year. During the relatively higher temperatures of summer, the impurities formed due to glass erosion usually remain in solution. However, autumn temperatures of 68°F. and less favor the insolubility of these materials in soap solutions and precipitation occurs. In the winter, continual temperature changes in indoor storage (warm during the week, with cold weekends) affect the products similarly.

AS a first step in resolving the problem of maintaining clarity of potash liquid soaps containing dissolved silicic acid and insoluble substances, it was necessary to inquire into the nature of the precipitates. Chemical analysis showed the precipitates to be composed substantially of calcium and iron stearates, acid stearate soap, silicic acids (*meta*-gelatinous and *ortho*-soluble) organic matter, dust, and also traces of the rare crystalline potassium di-silicate. Percentage-wise, the results of many tests are as follows:

	per cent
Silicic acids (as SiO_2)	0.009 -0.041
Iron (as Fe_2O_3)	0.0005-0.0018
Calcium (as CaO)	0.001 -0.0038
Fatty acids (as stearic)	0.016 -0.065

Noteworthy is the fact that if these impurities were present in a dehydrated physical form they would be barely perceptible. Analyses show, however, that all of these impurities are present in a highly hydrated physical form, in the order of 20 to 1. For example, the weight of the dry precipitates obtained from an eight-ounce glass bottle amounted to 0.0935 grams but the volume of the precipitates before drying measured 2 cc. An opaque gelatinous precipitate of this volume shows up as an unsightly mass in the bottom of an eight-ounce bottle of liquid soap.

The influence of temperature on the composition of liquid soap clouds in glass containers was studied at three different levels of temperature. At the low temperature, 40°F., practically all the impurities except *ortho*-silicic acid are found to be insoluble in liquid soap solutions. The middle temperature range studied, 65°-68°F., is apparently a transition range for all the impurities except *ortho*-silicic acid. At the higher temperature level, 90°F. and above, all of the precipitates become soluble and the liquid soaps remain clear.

Further tests were made in order to correlate cloud point temperatures with various concentrations of calcium stearate in liquid soaps. Measured quantities of a standard calcium chloride solution were added to a freshly refrigerated and filtered 30 per cent concentrated liquid soap shampoo. The product was heated to 200°F. in order to obtain complete solution and conversion of the lower titre lime soaps, to calcium stearate which preferentially precipitates when the solution is cooled. The temperature at which the liquid soap solution clouded was observed. The results are summarized in the accompanying table (P. 35).

It is noted that the percentage of lime (as calcium oxide) required to effect precipitation of calcium stearate at a temperature of 68°F. is 0.001 per cent. An amount of 0.004 per cent will cause cloudiness at 91°F. This is in close agreement with the earlier mentioned per cents of calcium stearate found in cloudy liquid soaps which show a variation of calcium oxide content between 0.001 per cent and 0.0038 per cent obtained from the glass of the bottle. This correlation

Sample	% $CaCl_2$	% CaO	% Ca Stearate (approx.)	Cloud Point, °F.
A.	0.08	0.04	0.40	147
B.	0.48	0.02	0.20	124
C.	0.02	0.01	0.10	133
D.	0.008	0.004	0.04	81
E.	0.004	0.002	0.04	.91
F.	0.002	0.001	0.01	68
G.	0.001	0.0005	0.005	50
H.	none	none	none	34 (V. S. Dull)

was later found to be important for control of the problem.

TO date, physical methods have not proved entirely satisfactory for solving the problem of clarity maintenance in liquid soaps and shampoos, and producers have turned to explore the field of chemical additives. Various organic solvents, such as alcohols, ethers, esters, phenols, etc., of low and high boiling point were tested. Phenols give excellent results whereas alcohols and glycerols are only fair. A large number of synthetic organic wetting and dispersing agents were examined and, in the majority of tests, were found wanting for one reason or another. Chemical additives such as hexa-meta-phosphate[3] and the other polyphosphates, along with several other organic sequestering agents, were tried with varying results. Tetra-potassium pyrophosphate[4,5] proved best but it leads to corrosion if steel containers. A patent sodium silicate[6] proved an excellent additive for the purification and subsequent clarity of liquid soaps but is not suitable when the products are to be packed in glass containers containing aluminum or zinc.

Analysis of the composition of the cloudy precipitates in various liquid soaps has further confirmed the findings of others that stearates are the salts principally responsible for the formation of precipitates in liquid soap products; whereas the calcium salts of the lower fatty acid homologues, decidedly more soluble, (10 to 1) are readily dispersed. As a means of maintaining clarity of liquid soaps and shampoos by de-stearinizing the vegetable fatty acid raw materials before processing into liquid soaps, the Emery process (90 per cent methyl alcohol) is very satisfactory. Samples of de-stearinated liquid soaps included in the tests showed little inclination toward clarity breakdown. However, the cost of de-stearinization and de-palmitinization is a factor to be considered before the adoption of such a method.

One feature in the investigation of clarity breakdown proved particularly difficult to overcome. Once the liquid product in a glass container became cloudy no way could be found to restore the original clarity except by heating over the critical temperature. This might be explained on the theory that once the sodium silicate derived from the glass hydrolyzes to silicic acid, it is precipitated as a flocculating gelatinous *meta*-silicic acid, the dissolution of this precipitate being prevented perhaps by the adsorption on its surface of a film of calcium stearate soap.

In order to investigate this adsorption theory, the action of a number of organic dispersing and sequestering agents was studied, among them, the poly-amino-carboxylic acids and their salts such as "Nullapon-B_7" and "Alro Water Softener A_5." The results of these tests were conclusive and demonstrated that these types of agents are remarkably successful in stabilizing liquid soaps against cloud formation. It was found that minute quantities of these materials (0.025 per cent-0.035 per cent dry basis) in a finished liquid soap inhibit the formation of cloudy precipitates when tested either by normal or rapid aging testing methods. A continuing and brilliant clarity is observed. The best results are obtained by adding a solution of the inhibitor to a properly formulated, aged, refrigerated and filtered liquid soap product in quantities of one-half to one gallon of a 3 per cent solution (dry basis) of a neutralized poly-amino-carboxylic acid to a 55-gallon drum of the soap. A sample of cloudy shampoo (4 years old) was treated with a few cubic centimeters of the inhibitor solution. The contents clarified within a few minutes at room temperature. The sequestering of the lime soap precipitate and the dispersion and dissolution of the gelatinous silicic acid when such an inhibitor is added to a liquid soap is an interesting phenomenon that can be observed visually. It was found, however, that such agents do not inhibit the erosion of glass or the dissolving of salt films from the inner surface of glass containers, but rather inhibit the reaction which would otherwise result in the formation of precipitates.

Conclusion

The organic sequestering and other dispersing agents have proved themselves of considerable worth in solving the obstinate problem of clarity maintenance of potash liquid soaps. The study of a number of the salts and other derivatives of poly-amino-carboxylic acids for use in other potash soap products is being undertaken. Further interesting developments have been achieved on other newer types of organic sequestering agents which not only markedly inhibit scum formation but also materially assist foam stabilization. The results of these early experiments and new developments are indeed favorable and indicate that these agents may be used to overcome soap curd formation which is perhaps the sole remaining major deficiency which can be charged to potash soaps.

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Some of the characteristics of enzymes are described which are capable of activating oxidation changes in fatty acids. Such enzymes are found in animal tissues, higher plants, molds, yeasts, and bacteria. The properties indicate that they are of potential commercial importance. J. J. *Jezeski*, *Trans. Am. Assoc. Cereal Chemists* 5, 37-49 (1947).

C. P. Long, Procter & Gamble Co., Cincinnati, Society 1st vice-president.

R. T. Milner, Northern Regional Research Lab. USDA, Peoria, Ill., is 1947-48 president.

S. O. Sorensen, Archer-Daniels-Midland Co. Milwaukee, chairman of governing board.

OIL CHEMISTS Meet in Chicago

New Builders for Synthetic Detergents and Continuous Fat Splitting Discussed

SOAP making by the continuous fat splitting process and proper promotors for increasing the efficiency of synthetic detergents, both problems destined to influence the future of the soap industry, were highlighted in discussions presented at the twenty-first fall meeting of the American Oil Chemists' Society at the Edgewater Beach Hotel, Chicago, October 20-22, 1947.

Although there were fewer soap papers on the program than is usual at the fall meetings of the society, their readings were well attended by a large segment of chemists and technical men from the various soap companies. Of particular importance to the small as well as to the major soap manufacturers was a paper reporting the effect of sodium carboxy methyl cellulose in enhancing the detergency of an alkyl aryl sulfonate type of synthetic detergent both with respect to carbon soil removal and whiteness retention, presented by Thomas H. Vaughn, Wyandotte Chemicals Corp., Wyandotte, Mich. A paper explaining and offering data on continuous fat splitting by the Colgate-Emery process, read by A. C. Brown, Emery Industries, Inc., Cincinnati, will be of interest in this country as well as abroad now that the process may be licensed for use here in the United States.

The meeting was the best attended fall conclave so far on record with a reported attendance of over 615 which exceeds the largest attendance figure of the past by over thirty or forty. General chairman was G. A. Crapple, Wilson and Co., Chicago. The 1948 fall meeting will be held in New York, November 15, 16, 17, with Foster Dee Snell as general chairman.

Committees on analytical methods for soap, glycerine, fats and color matching met during the three day session but no major changes in methods was reported. A word of warning was offered by R. C. Stillman, Procter and Gamble Co., Cincinnati, that the problem of securing Lovibond glass color type is still acute, and that no more ¾ x 2 inch glasses are to be made. Plans are to replace the color glass method by photometric or spectrophotometric methods as soon as their development can be brought to a satisfactory point. An additional committee was set up to review the F. A. C. color standards. Revisions in methods were recommended, namely a revision of section C1-41 on sampling and a change in the periodic acid method for glycerine determination.

Technical Exhibits Featured

The technical exhibits, a regular feature of the fall meetings of the American Oil Chemists Society were under the direction of Lucy R. Hawkins, executive secretary. Twenty-one firms servicing the soaps, fats and oils industry were represented. Inland Steel Container Co., Chicago had on hand samples of their lug cover 10-gallon pails and bolted locking ring drums. Wyandotte Chemicals Corp., Wyandotte, Mich., showed samples of their new alkyl aryl sulfonate synthetic detergent "Kreelon" which is expected to be produced commercially early in 1948. Ethylene oxide and a number of glycols are in production now and "Carbose", the company's sodium carboxy methyl cellulose product is now also available in commercial quantities. Small horizontal and vertical plate filters were exhibited by Sparkler Manufacturing Co., Munde-

lein, Ill., and Niagara Filter Corp., Chicago, respectively. A number of glycol stearates and laurates as well as wetting agents useful in cosmetic formulation were shown by Glyco Products Co., Brooklyn. The company's new high melting point synthetic wax, "Acrawax-C" was also on exhibit. Information on the Colgate-Emery process for continuous fat splitting as well as the "Emersol" process for fatty acid separation was available at the Blaw-Knox booth. Descriptions of installations for the fractional distillation of fatty acids were available from Foster Wheeler Corp., New York. Of interest to Soapers who produce their own oils from vegetable and animal sources by solvent extraction was the rapid progress made since the war by the solvent extraction industry exemplified by displays showing the "Kennedy" extractor by Vulcan Copper and Supply Co., Cincinnati, and the packaged unit extraction set-up recently developed by V. D. Anderson Co., Cleveland, well known in the industry for their expellers and steam traps. The De Laval Separator Co., Chicago, featured a large flow diagram of the Clayton continuous process for refining oils. The ability of "Nuchar" activated carbon to bleach various fat and oil products was a feature at the booth of Industrial Chemical Sales division of West Virginia Pulp and Paper Co., Tyrone, Pa.

The general session on October 20th was called to order by Reid T. Milner, Northern Regional Research Laboratory, Peoria, president of the society for 1947. G. A. Crapple, chairman of the Chicago committee, welcomed members. L. B. Parsons, Lever Brothers Co., Cambridge, Mass., fourth vice-president of the society presided. Three papers having to do with soaps and fatty acids were presented and a report of an "American Representative on the Fat and Oil Commission of the International Union of Chemistry" was offered by Dr. Snell. Five other papers of interest to those processing fatty materials for subsequent soap making were offered during the session on processing of fatty materials held October 23rd with A. R. Baldwin, Corn Products Refining Co., Argo, Ill., presiding. The important points brought out in these papers follow:

Reviews London Meeting

THE need for adequate U. S. representation on the Fat and Oil Commission of the International Union of Chemistry because of the international standing of the methods adopted by the commission was stressed in a report by the American representative Foster Dee Snell, Foster D. Snell Inc., New York. Dr. Snell, elected a vice-president of the Fat and Oil Commission at the London meeting this summer, stated that on the resumption of its function after a break of nine years due to the war, the commission officially had four French, three British, two Swiss members and one each from Netherlands, Italy, and Czechoslovakia. The United States was originally represented only by an alternate but now has the following three members: Foster Dee Snell, V. C. Mehlenbacher, Swift and Co., Chicago; and Professor H. E. Longenecker, University of Pittsburgh.

The National Research Council, which is the official body representing United States at the Union, has appointed an American Fat and Oil Commission, which, as such, will be in a position to meet on equal terms with like-named commissions from other countries. In addition to the three above-mentioned U. S. representatives to the International Commission, under the chairmanship of Dr. Snell, the American Commission includes four other men prominent in the fat and oil industry, namely C. P. Long, Procter and Gamble Co., Cincinnati; L. B. Parsons, Lever Brothers Co., Cambridge, Mass.; R. T. Milner, Northern Regional Research Laboratory, USDA, and president of AOCS; and T. H. Hopper, Southern Regional Research Laboratory.

Dr. Snell outlined the progress made by the International Commission which held four sessions devoted to resumption of collaborative work on sampling and analysis of soaps, fats and oils and related products, stating that very few final decisions were reached, matters being

In this informal group of soap chemists at the AOCS Chicago meeting are (1st row, left to right) William Stewart, Swift & Co., Atlanta, Ga.; Laurence K. Whyte, Colgate-Palmolive-Peet Co., Kansas City, Kan.; C. P. Long, Procter & Gamble Co. Ivorydale, Ohio; Harvey C. Bennett, Los Angeles Soap Co., Los Angeles; William J. Govan, Jr., Pacific Soap Co., San Diego, Calif.; and (2nd row, left to right) J. T. R. Andrews, Procter & Gamble Co., Ivorydale, Ohio; L. B. Parsons, Lever Brothers Co. Cambridge, Mass.; Eugene W. Blank, Colgate-Palmolive-Peet Co., Jersey City; Nelson T. Joyner, Lever Brothers Co., Cambridge, Mass., and Thoburn C. Bond, Swift & Co., Los Angeles, Calif.

largely left for a confirmation at a meeting to be held next year in Paris or the following year in Amsterdam. The technics of the AOCS were individually advanced by the British members, and received consideration.

Extender for Synthetics

CERTAIN forms of sodium carboxy methyl cellulose were shown to be highly effective as synthetic detergent builders and ternary systems of synthetic, sodium carboxy methyl cellulose and certain alkaline inorganic salts in quite a range of formulations were shown to have almost any desired level of detergency and to meet other requirements such as maximum or minimum foaming, high or low alkaline salt content, etc. in a paper titled "The Effect of Sodium Carboxy Methyl Cellulose on Synthetic Detergent Systems," by Thomas H. Vaughn and Clifton E. Smith, Wyandotte Chemicals Corp., Wyandotte, Mich.

Investigations into the effectiveness of sodium carboxy methyl cellulose as a detergent promotor and sequestering agent stem from a study made at the close of the war on the German carboxy methyl cellulose product, under the name of "Tylose-HRB" and its effect on the detergency of three commercial synthetic detergents: "Arctic Syntex L"., the sodium salt of a sulfated monoglyceride produced by Colgate-Palmolive-Peet Co., Jersey City; "Igepon-T", the sodium salt of a fatty acid sulfonated amide, offered by General Dyestuff Corp., New York; and "Neutronyx-228", a polyalkyl ether condensate of fatty acids, manufactured by Onxy Oil and Chemical Co., Jersey City. This work, done on samples of synthetic sea water, approached the problem of detergency measurement from two directions, determining both carbon soil removal and whiteness retention—former property being the capacity of a detergent solution to remove soil from a standardly soiled pretreated Indian Head muslin fabric, and the latter, whiteness retention, involving the capacity of the solution to suspend a colloidal soil and prevent its deposition upon an unsoiled standard fabric.

In samples of the sea water with a hardness equivalent to 7 gr./gal. $CaCO_3$ ($MgCl_2.6H_2O$—11.6 g.; $CaCl_2.H_2O$—1.6 g.;—Na_2SO_4—4.0 g; NaCl—25.0 g. in one liter distilled water) concentrations of as little as 10 per cent based on the weight of the detergent caused increases in the per cent carbon soil removal in the order of 60 per cent for Artic Syntex L and Igepon T and around 45 per cent for the non-ionic type detergent Neutronyx 228, when tested in detergent concentrations of 0.5 per cent at a temperature of 140°F. and a pH of 8.8. Under the same conditions, whiteness retention, in the case of Artic Syntex L increased 70 per cent and higher and the other two. synthetics showed increases of around 35 per cent.

Upon confirmation of the detergency-promoting properties of sodium carboxy methyl cellulose, work was immediately begun upon the development of processes for the manufacture of this material which now appears, in technical grade, under the tradename of "Carbose."

The detergent efficiency of this product coupled with "Kreelon 4D," the company's synthetic detergent of the sodium alkyl aryl sulfonate type, was then studied and Carbose was found to promote the detergency of this product in a manner and degree comparable to the results of the Tylose study. A study was then made of the effect on the detergent property of this mixture when a third additive was introduced. Two simple salts, sodium carbonate and sodium meta-silicate and two complex commercial products—"Yellow Hoop" and "Silicated Ash"—all suitable for use as detergent builders were included and a number of tests were run on this ternary system. Conditions for the tests were set up and the data were interpreted on triangular coordinate graphs in such a way that any number of combinations of detergent, promoter, and inorganic salt builder having certain desired characteristics may be located as existing in areas bounded by iso-detergency contour lines at various levels. The area of greatest carbon soil removal was found to exist usually within bounds approximated by synthetic detergent = 50-80 per cent, Carbose = 20-50 per cent, builder = 0-30 per cent.

Under the conditions of these tests, a good grade of unbuilt soap of a type commonly used in commercial laundering, has a relative carbon soil removal value of 147 per cent (based on Kreelon 4D as 100 per cent). Along the 150 per cent contour line, a large number of mixtures are found which approximately equal this value, some of which may contain as little as 26 per cent of synthetic detergent. Mixtures represented by all points falling within the area bounded by the 150 per cent contour line and the Kreelon 4D axis exceed, in varying degree, this soap in carbon soil removal.

Whiteness retention tests were also run on the four systems and the effect of carboxy methyl cellulose on this retention was found to be great and largely independent of the composition of the rest of the system. That is, the whiteness retention properties inherent in the Carbose are such as to make negligible the contribution to whiteness retention of the builders and of the synthetic detergent. Based on a value of 100 per cent for Kreelon 4D, the various alkaline salts tested offer values ranging around 15 per cent and the high grade unbuilt laundry soap previously mentioned, a value of 197 per cent. In general the addition of 10 per cent Carbose to almost all combinations of the synthetic and any one of the four alkaline salts included will result in products having whiteness retention characteristics equal to or greater than a typical high grade unbuilt soap.

The water softening effect of sodium carboxy methyl cellulose was observed to be appreciable and a study was made of the sequestering effect upon hard water cations of Carbose as compared with that of tetrasodium pyrophosphate. Data were determined in terms of milliliters of 0.261 per cent sodium oleate solution required to produce a stable foam in 50 mls. of a synthetic hard water of 8.4 gr. per gallon hardness prepared by dissolving the proper quantities of calcium chloride and magnesium sulfate in distilled water to give a ratio of Ca:Mg of 2:1 and the desired hardness both expressed

as $CaCO_3$ equivalent. It was found that soap requirement to produce sudsing was reduced by about 35 per cent at a concentration of Carbose of 0.2 per cent but further increase of Carbose concentration resulted in very little further reduction in soap demand. Carbose compared favorably with tetrasodium pyrophosphate (TSPP) in this property until concentrations of 0.2 per cent were reached; TSPP, however continued its influence in lowering soap demand as its concentration was increased beyond this 0.2 per cent point.

Contrary to the usual supposition, investigation gave evidence of depreciated efficiency of anionic synthetic detergents when used in hard water, per cent relative carbon soil removal running around 110 to 120 for hard water as against 160 for distilled water at a 5.0 per cent concentration of Carbose based on the weight of Kreelon 4D at 140°F. However, the addition of as little as 10 per cent Carbose makes it possible to obtain greater carbon soil removal in 15 grain water than is possible in distilled water in which no Carbose is used. The effect of addition of Carbose to the synthetic in both hard and distilled water on whiteness retention, however, is more noticeable than on carbon soil removal. The cause of this favorable effect is unknown but may be due to a possible superior soil suspending action of the calcium or magnesium salts of the alkyl aryl sulfonate as compared to that of the sodium salt. For example, a concentration of Kreelon 4D of 0.25 per cent and 5 per cent Carbose (based on weight of Kreelon 4D showed a relative whiteness retention figure of about 200 per cent in distilled water, with 8.4 gr. water—240 per cent, and with 15.0 gr. water the figure was up to about 260 per cent. This may be due to a possible superior soil suspending action of the calcium or magnesium salts of the alkyl aryl sulfonate as compared with that of the sodium salt.

In Dr. Vaughn's paper, methods having a relatively high order of precision for the evaluation of detergency were presented in detail. By these methods, both carbon soil removal and whiteness retention as applied to the laundering of cotton fabrics may be measured independently.

Continuous Fat Splitting

ONE type of the countercurrent, continuous fat-splitting processes which are now in use by major soap companies, was explained in a paper titled "Continuous Fat Splitting Plants Using the Colgate-Emery Process" by H. L. Barnebey, Blaw-Knox Co., Blawknox, Pa., and A. C. Brown, Emery Industries, Inc., Cincinnati. The process is said to produce fatty acids that can be bleached to a quality equivalent to or better than that of fatty acids produced by other means. Fat and water react in a countercurrent fashion in a vertical alloy tower at 725 pounds per square inch pressure and 500°F. temperature to give a hydrolysis efficiency of 98 per cent. Economies result from an arrangement by which heat is exchanged between fatty acids and water at the top and between fat and sweetwater at the bottom of the tower. The output of sweetwater is controlled by an automatic interface control and almost any type of fat can be handled. Low grades of fats may be acid-boiled and deaerated first. Although the end-product of the process is usually darker than in some other fat-splitting processes, some soaps can be made without recourse to fatty acid distillation.

It was offered that the Emery plant at Cincinnati handled 3,000 pounds of feed per hour by April 1947 and used untreated Cincinnati water with an 800 pound steam generator. The Swift and Co. plant at Hammond, Ind. is expected to be in operation within the next few months. Materials recommended for use in the tower are "Inconel-B" or a special low carbon content type of "316" stainless steel. Efficiency data on two runs with a low grade, acid boiled, animal fat are presented below:

With an efficiency of over 5 pounds of fat split for each pound of steam used, and since no catalyst is employed, the process is likely to point the way of future expansion, particularly for the larger soap companies.

Process	*Fatty acid (as oleic)*		*Glycerine in sweetwater*	
Colgate-Emery	99.3%	98.1%	12%	16.7%
Twitchell	96%	97%	11%	13%

High pressure (800 lb.) steam = 184 lbs. per 1000 lbs. feed
Power and light = 5.3 KWH's per 1000 lbs. feed
Labor = 0.23 man hours per 1000 lbs. feed

Twitchell Splitting Data

IN a paper titled "Changes in Composition of the Fatty Phase During the Twitchell Splitting of Coconut Oil," by H. H. Mueller and E. K. Holt, Lever Brothers Co., Cambridge, Mass., the course of the Twitchell reaction was followed with respect to the amounts of mono-, di- and triglycerides, free fatty acids, and free and combined glycerin present in the fatty phase. Dr. Mueller pointed out the necessity of pretreating low grade tallow and grease stocks before Twitchelling and that if the hydrolysis is not carried out thoroughly and the end-product washed well, mono- and di-glycerides are likely to be present in the fatty acid being distilled and lead to esterification, causing higher distillation residues. Tracing the changes in the constituents during the boiling, Dr. Mueller explained data showing that during the early few hours of the boil, the triglyceride concentration decreases rapidly and amounts of di- and mono- glyceride are built up. The concentration declines as the boil continues, all of which supports the theory that the reaction proceeds stepwise from the tri- to the di- to the mono-glyceride but finally, as the boiling continues, all three steps take place simultaneously. At the end of the first boil (35 hours), the free fatty acid was up to 76 per cent and the liberated glycerine was at 66 per cent of the total. At the end of the third boil (45 hours), the fatty acid content had reached 92.2 per cent and the glycerine liberated was about 92 per cent of the original content.

Refining Fatty Oils

RESULTS of a study of the Ewing process of refining crude fatty materials with liquid propane under

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THE FITCH CASE

By Andrew P. Federline

WHEN the Federal Trade Commission held its hearing in the "Fitch Dandruff Remover Shampoo" case on October 6 in Des Moines, it set in motion judicial procedure that may have an important effect on the advertising claims made not only by the F. W. Fitch Company and the F. W. Fitch Manufacturing Company, but also by many other manufacturers and brand owners of shampoos and scalp preparations, in the event the Commission succeeds in proving all of its allegations of fact set forth in its complaint concerning the etiology of dandruff and the action and effect thereon of the product in question.

While the Fitch complaint has been pending since May 21, 1946, the intervening time has been spent largely in what might be called preliminary skirmishes, which did not test the issues involved in the complaint, but which if successful might have avoided the necessity of the Fitch companies alone having to defend them. Very briefly summarized the issues are whether or not certain Fitch advertising claims are false because they are inconsistent with certain facts alleged by the Commission to apply to the product in question and the physiological condition for which it is sold.

During the preliminary skirmishes, the Fitch companies on April 16, 1947, filed with the Commission a motion to recall the complaint for the purpose of having the Commission order a general study of the shampoo and scalp preparation industry in the United States so as to determine the extent to which the practices alleged against Fitch were common in the industry, and whether or not they were violations of the law. An alternative request included in the motion was that the Commission issue complaints against other shampoo and scalp preparation manufacturers, in addition to Fitch, who were alleged to be making representations similar to one of more of those made by Fitch, and to consolidate all such proceedings for hearing and determination so that any order issued by the Commission would apply to all alike.

Appended to the Fitch motion to draw in other respondents were exhibits showing the advertising of other companies which Fitch alleged made claims similar to claims in the Fitch copy. Altogether advertisements covering twenty-seven shampoos and scalp preparations were appended to the Fitch motion as exhibits. Among them were advertisements of such well known brands as "Listerine," "Drene," "Halo," "Prell," "Admiracion," "Glover's," "Clairol," "Kreml," "Laco," "Breck," "Mahdeen," "Vitalis," and "Packer's." This motion, however, was denied by the Commission on September 8th and the way thus cleared for the hearing at Des Moines on October 6, at which the Commission went through the customary formality of proving by evidence or stipulation the jurisdictional allegations in the complaint. These allegations covered the corporate existence of the Fitch companies, sale of the product in interstate commerce, and publication or broadcast by Fitch of the advertisements or radio continuities set forth and objected to in the complaint. Since no jurisdictional issue developed at the Des Moines hearing, it means that at the subsequent hearing, which was to be held at the Commission's office in Washington on November 3 and 4, the way would be clear for the introduction of medical and other testimony by both the Commission and Fitch to prove or to disprove other allegations set forth in the complaint.

The hearing in Washington on November 3 and 4 was open to the public just as was the hearing in Des Moines on October 6, and all shampoo and scalp preparation manufacturers having an interest in the matter were privileged to attend. At the Des Moines hearing, however, the only persons present were Mr. L. R. Sandahl, vice-president of the Fitch companies; his attorneys, Messrs. Frank Comfort and Richard E. Williams; and Messrs. W. L. Pencke, Trial Attorney, and Mr. John P. Bramhall, Trial Examiner, for the Federal Trade Commission.

The apparent lack of interest on the part of shampoo and scalp preparation manufacturers in this case may be due to a natural assumption on their part that an adverse decision by the Commission would apply only to the Fitch companies, and that if advertising claims of their companies are ques-

F.T.C. charges of false and misleading advertising against "Fitch Dandruff-Remover Shampoo" weighed at Washington hearing . . . important implications for other shampoo manufacturers as well

tioned, they will have their day before the Commission. While this is true in a sense, it might be well to outline some aspects of the situation that could have an important effect on the advertising claims made by others for their own products due to the *issues of fact* involved in the Fitch case.

If one asked the average legal adviser whether an adverse decision in the Fitch case would stop others from making similar claims for their products, the chances are one would be told that it would not, since every decision made by the Commission must be based on the issues involved in the particular case and the weight of the evidence presented. Any such assumption in the Fitch case, however, might prove very misleading and costly to those who have large sums of money invested in catch phrases that arrest consumer attention and cause them to purchase a particular brand of shampoo. The reason for saying this is that if the allegations of fact in regard to the etiology of dandruff and the action and effect of shampoos are established before the Commission as set forth in the complaint, and possibly later affirmed on appeal, the factual precedents thus recognized will be the basis on which similar advertising claims will be weighed in the future by the Commission and the courts until they are upset by overwhelming scientific proof.

In making his case before the Commission the trial attorney does not and can not stop at merely asserting that the Fitch advertising claims are misleading to the average purchaser of the product. He must go further and both allege and prove that they are misleading. To this end he makes, first, a series of allegations of fact in the complaint, which he later endeavors to prove to support his request for a cease and desist order by the Commission. What it amounts to is that before he can prove his case as a matter of law, he must first set up and prove the medical or other facts which will provide a measure of the truthfulness of the advertising in question.

AMONG the numerous allegations of fact made in the complaint, which could become issues of fact at the Washington hearing, scheduled for November 3 and 4, if challenged by the Fitch attorneys or by any others who are permitted to intervene in the case, are the following which shampoo manufacturers and brand owners might like to examine closely to see whether or not they are consistent with the thinking underlying their own claims:

> Dandruff is a physiologically normal condition, consisting of dried dead cells cast off from the skin of the scalp which will readily flake off or be held in place by the natural oils of the scalp, and in that event adhere to the scalp more closely;
>
> The accumulation of dandruff does not necessarily damage the health or beauty of the hair;
>
> The recurrence of dead skin cells on the scalp in the form of dandruff constitutes a normal physiological action, and for that reason, dandruff cannot be removed permanently through the use of any cleansing agent, including respondent's product.

Some other allegations of fact the Commission was expected to undertake to prove, which might possibly apply by analogy to other products, are—

> Respondent's product will not penetrate into the hair openings and will not give the scalp a basic or corrective cleansing; nor will it be effective in correcting either dry or oily hair conditions. Its action and results are not materially different than many other shampoos.
>
> Respondent's product does not dissolve dandruff. Such material is taken up by the soap emulsion and rinsed from the scalp.
>
> It is not a healthy stimulant to the scalp, does not recondition the hair, nor does it give a new tone to the scalp or vitality to the hair.
>
> The product constitutes no more than an effective cleansing agent for washing and cleaning the scalp and hair.
>
> Its use on children will not assure their having attractive hair in the future.
>
> Use of the product will not save the user's hair.

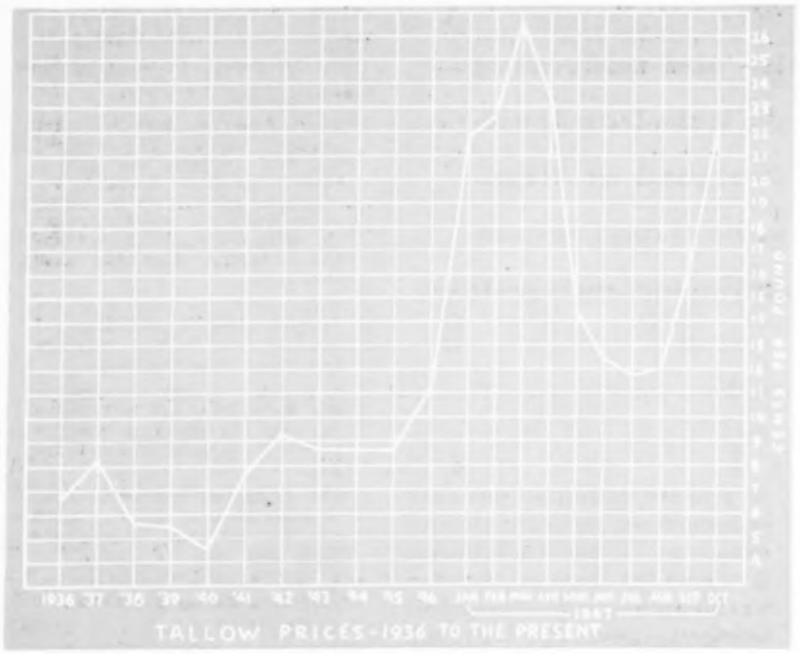
Even though the product is alleged to contain a large percentage of alcohol, the Commission maintains—

> That it will act as a mild antiseptic on the surface of the scalp, but will not kill all germs normally present on the scalp and will not make the scalp antiseptically clean and free from germs.

In addition the Commission contends that the use of the preparation on the scalp of babies may be dangerous in that it may cause serious irritation of the delicate scalp and skin due to the large percentage of alcohol contained therein.

The Commission also claims that use of the product name "Fitch Dandruff Remover Shampoo" plus the phrases designed to arrest consumer attention such as "your dandruff has disappeared," and "Goodbye dandruff" and reference to "so-called dandruff cures" when extolling the virtues of the Fitch product, together with the statement that one of the world's largest insurance companies guarantees that the purchase money will be refunded if Fitch Shampoo does not remove every trace of dandruff on first application, all combine to mislead purchasers of the product into believing that dandruff is an abnormal con-

(*Turn to Page* 152A)



By John R. Skeen
Foster D. Snell, Inc.

TALLOW—*what next?*

THE preeminent importance of tallow as a soap making raw material, and the recent sharp moves,—first downward, then back upward — in tallow prices, have prompted the following statistical summary of production, consumption, stocks and prices, setting the recent position against the background of the previous 10 years.

Before the war the tallow price range was in the neighborhood of four and one half to eight cents per pound. Under government wartime controls the price was stabilized at 8.6c. When controls were discontinued, tallow started an upward price trend, reaching a level of 26.6c in March, 1947. The market dropped from this peak through the spring and summer, as demand lagged and stocks accumulated. Within the past two months, however, the stimulus of heavy exports of fats and oils to Europe has been responsible for another sharp advance in the market, with city extra tallow reaching a level of 22 cents a pound in late October. Incidentally, these sharp gyrations in price have occurred during a period when government controls have been the chief factor affecting the market.

Turning from price to consumption, a sharp contrast is shown between pre-war and post-war figures. During the pre-war period, 1936-1939, the apparent annual consumption of tallow and grease was 960 million pounds. During the war years, 1942-1945, this increased to 1844 million pounds annually. The peak rate continued during the first half of 1947.

In pre-war years, approximately 83 per cent of the total consumption of tallow and grease went to soap. During the war, soap consumption accounted for only 78 per cent and a low of 72.7 per cent was reached in 1946.

The approach to peace-time levels has been rapid in 1947. Nearly 90 per cent of total tallow production was used in soap before 1941. In 1946, soap makers used about 75 per cent of tallow production, and, presently, they are taking slightly more than 80 per cent.

The effect of the war and the sharply increased demand for tallow on stocks is clearly indicated in the accompanying table. Stocks of inedible tallow, which were about 295,000,000 lbs. at the end of 1940, dropped to a low of 114,000,000 lbs. in December, 1946. There has been a fairly substantial recovery in the stock position this year, however, particularly during the second quarter, and stocks had been built up to 168,041,000 lbs. on September 30, 1947.

In appraising the accompanying table, it should be noted that there is an apparent contradiction encountered in attempting to reconcile figures for production and consumption. The apparent factory consumption of tallow significantly exceeds factory production even after adjustment for change in stocks, imports, and exports. In part, this is due to the unreported 'country' supply of tallow and, in part, because of the inclusion as tallow of a marginal quantity perhaps more properly designated as grease. No reliable basis for correction is available. There is no good foundation in fact for stat-

ing that the estimates for apparent consumption of tallow include about 10% grease, and that 15% of the total domestic production is consistently unreported. While such 'informed' guesses may be fairly accurate over a period of years, they may be variable for spot years.

Government publications are the source of the data given in the table. Grease is included only of necessity. The 'Basic Data' need little qualification, as reported figures are believed to be dependable. This is also true for the apparent consumption of tallow plus grease, both total and in soap. Separately, values for tallow and grease are only approximate.

Warns 1948 Fat Shortage

The world shortage of fats and oils will perhaps be more acute in 1948 than it was in 1947, D. A. Fitzgerald, secretary-general of the International Emergency Food Council told member nations on October 27th, in Washington. Apart from a hope of substantial improvement in supplies from the Netherlands East Indies, no major increase in production is in sight and due to the general Agricultural situation, substantial decline is in prospect for both North American and European production.

Reports Fat Salvage Data

According to the fifth annual report of the American Fat Salvage Committee, New York, American women and the armed forces recovered an average of 422,000 pounds of used fats every day for the five-year period, August, 1942, through July, 1947. Through the fat salvage program, a total of 810,631,613 pounds of fats has been returned to the national economy of the United States. During this period, American homes saved and turned in 625,872,767 pounds of fat, an average of 18.4 pounds for each of 34 million housekeeping families. The armed forces recovered 184,758,846 pounds.

The report goes on to say that, as a joint Government-industry operation, the program's recovery of used fat amounts to nearly 10% of the total U. S. production of inedible tallow and grease. In the 24 months following the end of the war, civilians turned in more than 247 million pounds of used fats, a monthly rate of nearly 10,300,000 pounds.

Textile Chemists Convene

Members of the dyeing and finishing industry as well as leading chemical and dye manufacturers attended the meeting of the American Association of Textile Chemists and Colorists, held October 23, 24, and 25, 1947, at the Congress Hotel, Chicago. Henry Herrmann, General Dyestuff Corp., New York, is president of the association.

Indelible Tallow & Grease: Consumption, Price & Basic Data (unit: million pounds)

	Apparent Consumption: Total					*Consumption in Soap*						*Basic Data: Tallow only*				
		Tallow		*Grease*		*Tallow & Grease*		*Tallow*		*Grease*			*Factory*			
	Total units	*units*	*% of total*	*units*	*% of total*	*units*	*% of total*	*units*	*% of tallow*	*units*	*% of grease*	*Price ¢/#*	*production units*	*Stocks units*	*Imports units*	*Exports units*
	1	2		2				3		3		4	5	6	7	7
1936	923	—	—	—	—	—	—	—	—	—	—	6.6	481	—	44.9[10]	2.8
1937	886	—	—	—	—	—	—	—	—	—	—	8.2	437	—	3.8	0.9
1938	942	—	—	—	—	—	—	—	—	—	—	5.6	517	—	1.2	0.5
1939	1084	—	—	—	—	905[8]	83.4	—	—	—	—	5.4	602	—	1.5	2.0
1940	1234	—	—	—	—	1044	84.6	787	—	257	—	4.5	712 (ca)	295	1.4	2.0
1941	1649	1191	72.2	458	27.8	1368	83.0	1057	88.7	311	67.7	7.6	821	254	30.4	2.3
1942	1853	1342	72.4	511	27.6	1528	82.4	1189	88.6	339	66.3	9.2	920	197	63.7	2.6
1943	1760	1082	61.4	678	38.6	1360	77.2	896	82.8	464	68.4	8.6	846	140	32.7	n.a.
1944	1923	1211	63.0	712	37.0	1530	79.5	1006	83.1	524	73.6	8.6	990	150	55.8	21.3
1945	1839	1211	65.8	628	34.2	1364	74.1	952	78.6	412	65.6	8.6	949	132	32.0	6.2
1946	1675	1164	69.5	511	30.5	1219	72.7	877	75.3	342	66.9	11.1	928	114	3.1	6.5
1947	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jan	—	118.8	—	46.9	—	—	—	—	—	—	—	21.8	95.7	116	—	—
Feb	—	120.7	—	43.9	—	—	—	—	—	—	—	22.6	89.0	120	—	—
Mar	—	118.2	—	43.9	—	—	—	—	—	—	—	26.6	87.3	117	—	—
1 Q	492.3	357.6	72.6	134.7	27.4	385.3	78.2	284.4	79.5	100.9	74.9	—	272	117[9]	0.3[11]	5.0[11]
Apr	—	109.0	—	40.5	—	—	—	—	—	—	—	23.3	96.6	128	—	—
May	—	98.6	—	42.1	—	—	—	—	—	—	—	14.3	102.7	161	—	—
June	—	94.2	—	39.4	—	—	—	—	—	—	—	12.5	97.2	177	—	—
2 Q	423.1	301.3	71.2	121.8	28.8	337.6	79.8	243.3	80.7	94.3	77.4	—	296	—	0.2[11] (ca)	9.2[11]
July	—	87.0	—	35.7	—	—	—	—	—	—	—	11.8[12]	91.8	192	—	—
Aug	—	111.9	—	41.7	—	—	—	—	—	—	—	—	84.6	184	—	—

[1]*Industry Report*, U. S. Dept. Agriculture, 1946, p. 51; 1946 and after, see *Facts for Industry*, M17-1.
[2]*Facts for Industry*, M17-7-05, 1946, p. 9; 1946 and after, see M17-1; 1940-42, U. S. Tariff Comm., July, 1943.
[3]Ibid, p. 26; 1946 & after, see M17-1; also Tariff.
[4]Price for "packers' prime", Bureau Labor Statistics.
[5]*Facts for Industry*, M17-7-05, 1946 for 1941-1945; M17-1 for 1946; *The Fats and Oils Situation*, U. S. Dept. Agriculture, for 1947; 1936-40, U. S. Dept. Agriculture "all grease excluded".
[6]*Facts for Industry*, M17-7-05, M17-1; end of period.
[7]*Foreign Commerce & Navigation*.
[8]*Trade Agreement Digest*, Vol. 1, 1946, U. S. Tariff Commission.
[9]*The Fats & Oils Situation*, U. S. Dept. Agriculture.
[10]April 1-Dec. 31, only.
[11]*The Fats & Oils Situation*, U. S. Dept. Agriculture; 2 Q, 1947 is approximated from 2 months.
[12]Unofficial and approximate.

TRADE NEWS. . . .

Cowles Starts New Plant

The new plant of Cowles Detergent Co., Cleveland, recently started production at Skaneateles Falls, N.Y., according to an announcement by Robert F. Huntley, vice-president and general manager.

To Build Rendering Plant

Plans are being prepared for construction of a new tallow rendering plant near Bakersfield, Calif., for the Royal Tallow and Soap Co., San Francisco. Included in the plans are a pre-fabricated steel frame building, 80 x 100 feet in area, and a two-story reinforced concrete structure 40 x 40 feet in area.

Perfumers Meet in N. Y.

The monthly dinner meeting of the newly-formed American Society of Perfumers was held in New York on Oct. 15th. Forty-six members and guests attended. William Dunner, sr., Ungerer and Co., New York, president of the society, presided. Dr. Arthur Behr, director of research for the aromatics division, Dow Chemical Co., Midland, Mich., spoke on "Some Problems and Approaches to Aromatics Research."

Ackley Joins Drew

Robert R. Ackley joined the oil and chemical division, E. F. Drew & Co., Boonton, N. J., October 13th.

ROBERT R. ACKLEY

He will be concerned with market development in sales. Mr. Ackley, formerly director of research for Richard Hudnut, New York, was at one time director of the industrial division, Onyx Oil & Chemical Co., Jersey City, N. J., in charge of development of emulsifying agents, wetting agents and antiseptics, and an advisory fellow at Mellon Institute.

NEW SOILAX PLANT:—Shown here is the new Lyndhurst, N. J., plant of Economics Laboratory, Inc., manufacturers of "Soilax" cleaner, "Super-Soilax" and "Tetrox" for mechanical and manual dishwashers respectively, and "Mikroklene," a germicide compound. The new lay-out has 40,000 square feet of floor space and has three high-speed package lines, batch mixing equipment and pneumatic raw material handling equipment. It is expected to increase the output of the company's products by forty per cent. Manager of the new Lyndhurst factory is Norman Sokol.

Lever Moves to Park Ave.

Lever Brothers Co., Cambridge, Mass., recently rented the entire north half of the fourteenth floor of the new twenty-two story building of the Tishman Realty and Construction Co. at 445 Park Ave., New York, according to an announcement by the Tishman Co. The edible and soap sales divisions of Lever Brothers are in the Nelson Tower at 445 Seventh Ave. The New York office of the Pepsodent division is in the Chrysler Building. It is understood that both these divisions will be transferred to the new quarters in the Tishman building.

Soap Sculpture Resumed

Resuming activities brought to a halt in 1945 as a result of wartime shortages, the National Soap Sculpture Committee, New York, announced late in October the twenty-first annual competition for prizes given by Procter & Gamble Co., Cincinnati, for sculptures in "Ivory" soap. A total of $2,650 in prizes, ranging from $250 to $25 will be awarded to winners.

Harold Cunningham Dies

Harold F. Cunningham, president and director of Oakite Products, Inc., New York, died recently at his home in Manhasset, Long Island. He was fifty years old.

Packaging Institute Meets

The Packaging Machinery Manufacturers Institute held its fifteenth annual meeting in Springfield, Mass., on October 5-7, 1947, with an attendance largest in the Institute's history.

Col. Ernest Briggs Dies

Lieut. Colonel Ernest Briggs, chairman of the board of Lever Brothers Ltd., Colchester, England, from 1938 until January 1, 1947, died Oct. 14th. He was sixty-six years old.

Rinso Adds Ingredient

A new additive to Rinso was announced October 15th by Lever Bros. Co., Cambridge, Mass. The material, trade marked, "Solium," is said to produce a greater "whiteness" to garments washed with Rinso by a unique method of eliminating "yellow" light. It is claimed that the use of Solium in the product eliminates yellowing by adding sufficient light derived from the invisible wave lengths to make white garments whiter and colors brighter. Apparently the compound, "Solium," converts previously invisible light into visible light.

Quaker Appoints Mosher

Quaker Chemical Products Corp., Conshohocken, Pa., recently announced the apopintment of Dr. Hugh H. Mosher as director of organic research. Dr. Mosher comes to Quaker after fourteen years with Onyx Oil and Chemical Co., Jersey City, N. J., where he was vice-president in charge of textile research and development. After serving a period as assistant professor of chemistry at the University of Nevada, he became chief chemist for U. S. Testing Co., and then research chemist for Cheney Bros. Silk Mills. In 1930 he was awarded the American Association of Textile Chemists and Colorists prize for the most valuable contribution to the chemistry of textiles.

New Lever Malaya Plant

Lever Bros. & Unilever Co., London, are planning a new factory in Kuala Lumpur, Malaya, to produce high-grade soaps, margarine, and other edible fats, according to a report by Geoffrey Heyworth, chairman of the company, now in Singapore making a survey of Malaya. The new plant will cost £500,000. The company proposes to develop intensively Malaya's palm oil industry and has already acquired its first estate of 4,000 acres. According to Mr. Heyworth, Malaya has about 75,000 acres under oil palms at present.

Lever Bros. and Unilever have had factories in Shanghai, Manila and batavia for some years and acquired a German-owned plant in Surabaya from the Dutch custodian of enemy property early in World War II. The Manila factory which was destroyed during the war is being rebuilt and the damaged Surabaya plant is now back in production.

FRONT COVER PHOTO

The photo of the famous Venus de Milo used on the front cover of this issue to illustrate the "enduring quality" theme for the Ungerer & Co. advertisement was made by John J. Loughlin, well-known box camera artist, whose pictures have been published in all parts of the country. The unusual feature of this photograph is the fact that it was made at night by use of a flash light through the glass of the display window of Lord & Taylor's department store in New York where the replica of the famed Venus was on display.

C-P-P Appoints Pickering

David B. Pickering, Jr. has been named premium buyer for the Colgate - Palmolive - Peet Co., Jersey City, N. J. He succeeds M. H. Richards, who retired Aug. 1.

Markets Skin Cleanser

A new skin cleanser in powder form called "Steropac" was announced in October by Scotch Products Corp., Cleveland. The product is claimed to have a pH of 6.5 and contains a quaternary ammonium emollient. It is said to be particularly effective for removing industrial grime and grease.

Schreiber Joins Pepsodent

Frederick W. Schreiber joined Pepsodent division, Lever Brothers Co., Cambridge, Mass., as chief control chemist, last month. Mr. Schreiber comes to Pepsodent from Personal Products Corp., a division of Johnson and Johnson, Milltown, N. J., where he was director of research and quality control. Prior to that he was with Wyeth Inc., Philadelphia.

Packaging Forum in N. Y.

The Ninth Annual Forum of Packaging Institute, Inc., New York, is being held at the Commodore Hotel, New York, Nov. 18-19. Besides a number of seminars designed to localize packaging discussions by particular industries, phases of the forthcoming New York meeting include sessions devoted to new products and methods, and packaging opportunities abroad. The Ninth Annual Dinner is scheduled for Tuesday evening, Nov. 18th. E. H. Balkema, Colgate-Palmolive-Peet Co., Jersey City, is on the entertainment committee.

Discontinue P & G Gift Pkgs.

Procter & Gamble Co., has announced discontinuance of the practice of sending gift packages of P & G brand soaps to service men. Instituted in Feb. 1944, a total of 18,747 gift packages were distributed, according to *Moonbeams*, company house organ. Only eight packages were shipped in the last mailing in March of this year.

SAYMAN PRODUCTS HONORED

Robert L. Lund, (left), Lambert Pharmacal Co., and Miss Grace Mack, Mississippi Valley Trust Co., present Dr. J. S. Brewer, (right) Sayman Products Co., St. Louis, with a scroll given for "brand names holding public confidence for 50 years or more" at a dinner of the Advertising Club of St. Louis, held Sept. 29, 1947.

Heads Fats & Oils Branch

The appointment of George L. Prichard as director of the fats and oils branch of the Production and

GEORGE L. PRICHARD

Marketing Administration was announced Oct. 8, 1947 by PMA Administrator Jesse B. Gilmer. Mr. Prichard succeeds Omer W. Herrmann, who was recently appointed assistant administrator of the Agricultural Research Administration.

Since August 1946, Mr. Prichard has been assistant director of the fats and oils branch. He is a native of Warren County, North Carolina, and attended the University of North Carolina. He has been with the Department of Agriculture since 1931, first with the Agricultural Adjustment Administration, and for the last four years with the Oilseed Branch of the Commodity Credit Corporation and the Fats and Oils Branch of the Production and Marketing Administration.

ADCA Reports Fall Program

The Allied Drug and Cosmetic Association of Michigan recently announced its first meeting date of the fall season, October 22nd at the Detroit-Leland Hotel, Detroit. This will be followed by a Keno Party and election of officers on November 19th. The association will hold its Christmas Party at the Book-Cadillac Hotel, Detroit, Friday, December 5th. This party was previously announced for Saturday, December 6th.

The asociation held its final golf outing of the 1947 season at the Birmingham Country Club, September 23rd. Trophy winners for the 1947 meeting: low gross, W. H. Elliott, Elliott Sales Co.; low net, W. I. MacDonald, Harry Holland and Son; and match play, B. Gherardini, American Cyanamid Co.

P & G Boosts Soap Prices

An increase of 6 per cent in the wholesale price of soaps and soap products and a three per cent rise in vegetable shortenings was announced October 22nd by Procter & Gamble Co., Cincinnati. It was the second increase in the wholesale prices of the products announced by the company within the past month. The earlier increases were ten per cent on soap and soap products and three per cent on shortenings. The increases were occasioned by the higher cost of raw materials, particularly fats and oils which have advanced sharply in price recently.

Adds to Kansas City Plant

A five-story addition and a granules soap-drying tower will be constructed this winter at the Kansas City plant of Procter & Gamble Mfg. Co., Cincinnati. Work on the new facilities is expected to start by mid-November, according to an announcement by H. K. Ferguson Co., Cleveland, in charge of design and construction.

Jacob Schwarzwalder Dies

Jacob Schwarzwalder in charge of soap making operations for the Lightfoot Schultz Co., Hoboken, N. J., for the past thirty years died on October 31 at his home at Forest Hills, Long Island. He had been stricken with a heart attack on October 28 at the soap plant. Mr. Schwarzwalder was born in Heilburn, Germany seventy-seven years ago and learned the soap manufacturing business there. Prior to his association with Lightfoot Schultz, he had been connected with the old Fairchild & Shelton soap business at Bridgeport, Conn. He had specialized in the production of fine toilet soaps for many years, being an advocate of small percentages of potash lye in their manufacture as long as thirty years ago.

Toothpaste Mfr. Visits U.S.

Paulin Niem, general manager and senior proprietor of Reliance Trading Co., Shanghai, is spending six

PAULIN NIEM

months in the United States investigating the purchase of new equipments and raw materials. The company was established in 1928 and has been an important contributor to China's industry. The company manufactures "Darkie" brand toothpaste which is well known and sold throughout China, and also toilet soaps and cosmetics.

John Sammond Dies

John E. Sammond, treasurer of B. T. Babbitt, Inc., New York, with which he had been for more than thirty years, died October 5th at his home at Woodhaven, Queens. He was born in Brooklyn 63 years ago and was a trustee of the First Presbyterian Church of Woodhaven.

C-P-P Offer New Cleanser

Colgate - Palmolive - Peet Co., Jersey City, N. J., recently announced a new cleanser, "Ajax," for kitchen and bathroom use. The product is said to possess an exclusive "foaming" action, developed by wartime research.

Tuerck to Latin America

William Tuerck, in charge of the sales department, Latin American division, Schimmel & Co., New York, will soon leave on an extended trip by air to visit most of the important centers in Mexico, Central and South America.

P. S. A. Plans Meeting Jan. 27th

THE Board of Directors of the Potash Soap Ass'n. met at the Downtown Athletic Club, New York, October 15th to complete arrangements for the annual meeting of the Association. In view of the fact that the National Sanitary Supply Ass'n. will hold a regional meeting in New York City, December 4th and 5th—the dates previously selected for the PSA meeting, it was decided to postpone the meeting of the Potash Soap Ass'n. until January 27th. The meeting as now planned will be a one day session in New York, immediately in advance of the meeting of the Association of American Soap & Glycerine Producers to be held January 28th and 29th. Details of the program are being worked out under the supervision of Herbert Kranich, Kranich Soap Co., Brooklyn, president of the PSA, and Andrew Federline, secretary. Among topics to be discussed will be the following:

1. Are Government controls on fats and oils being applied with due regard to the interests of American soap manufacturers and soap consumers?
2. What will be the impact of the Marshall Plan on world and domestic fat supplies in general, and the domestic soap industry in particular?
3. How may the sale of members' products be increased? A symposium during which suggestions will be offered by (a) manufacturers, (b) wholesalers, and (c) consumers.
4. Must the consumer be educated in the proper use of liquid soaps in dispensers?
5. How and why are synthetic organic detergents displacing potash soaps for particular uses, and vice versa?
6. Hints on how to make better potash soaps and detergent compounds.
7. How fatty acids are being used to save manufacturing time, lower costs and improve the quality of soaps (a symposium).
8. For what uses are straight coconut oil soaps better than blends, and vice versa?
9. Formulation and packaging problems erroneously attributed to caustic potash and how they have been corrected (a symposium).
10. What does the Government aim to do through its current revision of soap specifications?
11. Would a trade practice conference produce beneficial results?
12. How the commercial laboratory serves the small soap manufacturer who does not have laboratory facilities.
13. What steps can and should the industry take concerning the current wave of disparagement of soaps in radio, newspaper and magazine advertising?
14. Shall the Association adopt and publicize an official definition of "anhydrous content" when applied to potash soaps?

Another topic discussed at considerable length by the directors was the recent sharp rise in the price of soapmaking fats and oils which followed the decision by the U. S. Department of Agriculture to increase sharply shipments abroad of American fats and oils. Mr. Federline advised the group that prior to this decision by the U. S. D. A. there had been a meeting in Washington, attended by a number of representatives of fat consuming groups, to which the Potash

(*Turn to Page* 81)

RESOLUTION

WHEREAS, Tropical oils have been, and must continue to be, imported into the United States in large quantities for soap manufacture in order to supplement inadequate domestic production of soapmaking fats and oils (inedible fats, oils, fatty acids and soapstocks); and

WHEREAS, Our Government has been and is licensing the export of substantial quantities of soapmaking fats and oils of both domestic and foreign origin, presumably for use in foreign soap manufacture; and

WHEREAS, Excessive depletion of our total supply through export make its impractical at times for soap manufacturers to buy the quantities and kinds of fats, oils, fatty acids and soapstocks needed to meet consumer requirements of soap in this country, thus forcing such manufacturers to divert to the soap kettle domestically produced edible fats and oils that otherwise could and would be used as food for feeding human beings; and

WHEREAS, Artificially created shortages brought about by licensed export of excessive quantities of soapmaking fats and oils not only intensify, but probably cause the unreasonably sharp upsurges in domestic prices for the remaining supply of such fats and oils; and

WHEREAS, Artificial shortages and resultant high prices for soapmaking fats and oils are against the public interest in that they not only harm both domestic soap consumption and domestic soap manufacture, but contribute needlessly to inflation; and

WHEREAS, By exercising greater foresight in facilitating imports and/or greater restraint in licensing export of soapmaking fats and oils, we believe our Government can aid materially in making it possible for domestic soap manufacturers to acquire adequate supplies of needed fats, oils, fatty acids and soapstocks without having to pay unreasonable prices therefor; and

WHEREAS, Soap manufacturers would find it most helpful in trying to satisfy domestic consumer needs for soaps if they might know currently the policy and aims of our Government with respect to the total supply of soapmaking fats and oils available for domestic soap manufacture; therefore—

BE IT RESOLVED, That we respectfully request the Secretaries of Agriculture and Commerce, acting jointly or individually, to use their best efforts to—

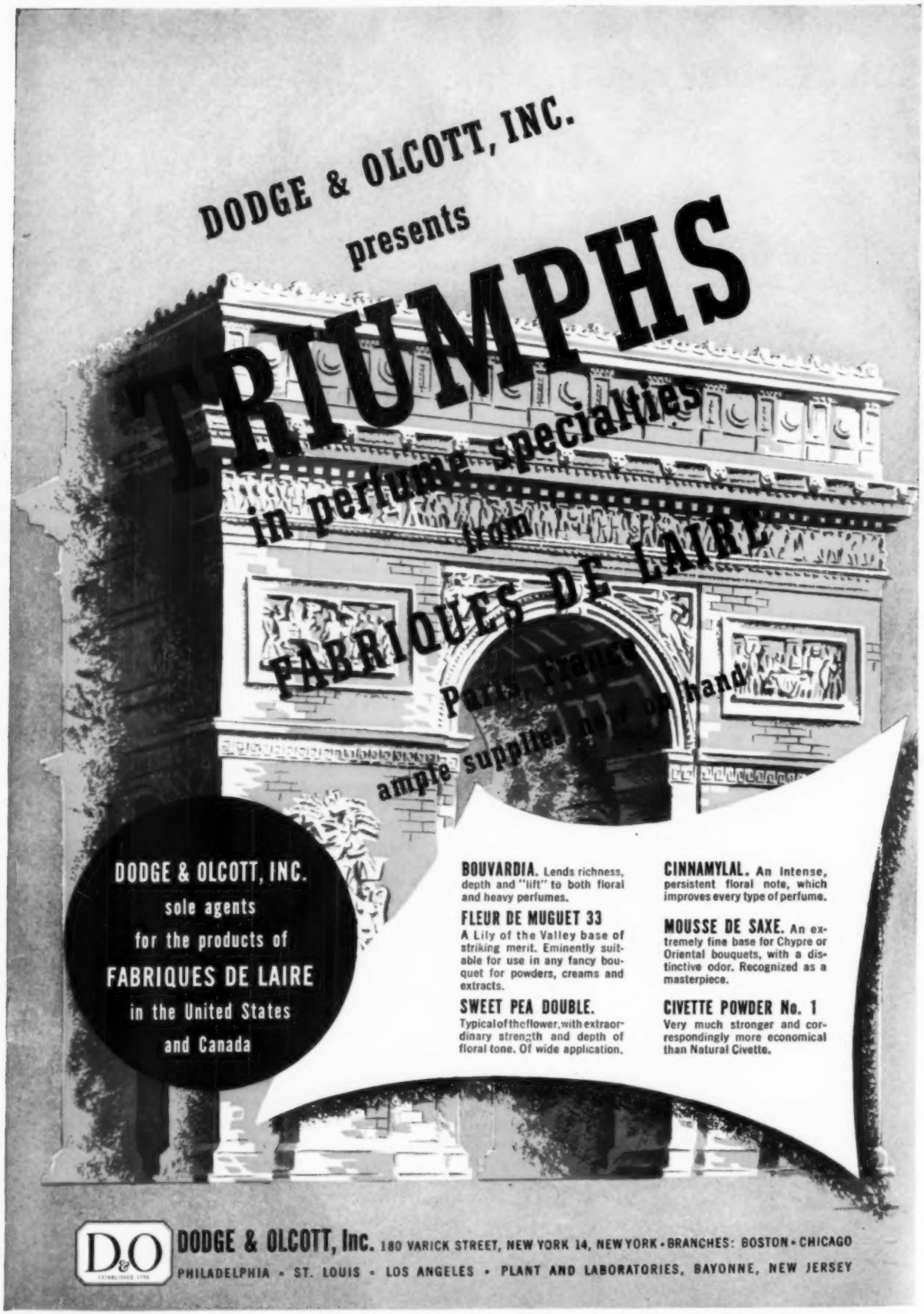
(1) Have imported enough tropical oils (or their equivalent in nuts or seeds) to supplement currently and adequately the deficiency in production of soapmaking fats and oils in the United States; and

(2) Curtail exports from the United States of soapmaking fats and oils (both domestic and foreign) where the effect will be to stimulate increase of domestic prices for the remaining marketable supply thereof above the level which prevailed in this country during the last week of August 1947; and

(3) Keep our industry and the public currently informed concerning our Government's policy and aims in regulating, through its exercise of import-export controls, the supply of domestic and foreign fats, oils, fatty acids and soapstocks that shall be available for domestic soap manufacture.

Adopted and respectfully submitted by—

BOARD OF DIRECTORS, POTASH SOAP ASSOCIATION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FABRIQUES DE LAIRE
in the United States
and Canada
BOUVARDIA. Lends richness, depth and "lift" to both floral and heavy perfumes.
FLEUR DE MUGUET 33
A Lily of the Valley base of striking merit. Eminently suitable for use in any fancy bouquet for powders, creams and extracts.
SWEET PEA DOUBLE.
Typical of the flower, with extraordinary strength and depth of floral tone. Of wide application.
CINNAMYLAL. An intense, persistent floral note, which improves every type of perfume.
MOUSSE DE SAXE. An extremely fine base for Chypre or Oriental bouquets, with a distinctive odor. Recognized as a masterpiece.
CIVETTE POWDER No. 1
Very much stronger and correspondingly more economical than Natural Civette.
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Soaps at Safety Conference

SAFETY in the chemical industry can only be achieved by paying meticulous attention to the many necessary details, a gathering of accident prevention specialists from the nation's leading chemical plants was told at the National Safety Congress in Chicago last month. "So far as I know," declared C. L. Jones, safety engineer of Hercules Powder Co., Wilmington, Dela., "that is the only way by which accidents can be prevented in any line of production." The safety program, he suggested, should be directed toward the proper storage and handling of solvents, diluents and other compounds, electrical equipment, heating, humidification, plant transportation and fire protection.

The Manufacturing Chemists Association has built up quite an extensive library on safe handling of chemicals, it was pointed out. Attention was likewise directed to the many pamphlets on this subject issued by the National Safety Council. One such on "Industrial Ventilation," has just been sent to the printer. Another on "Chemical Waste Disposal" is in preparation and a third on "Protective Clothing" is being revised.

Allen L. Cobb, of Eastman Kodak Co., Rochester, N. Y., was elected general chairman of the Safety Council's chemical section to succeed H. F. Gilbert, safety director of American Cyanamid Co. New vice chairman of the section is S. M. MacCutcheon of Dow Chemical Co., Midland, Mich., and the new secretary is John Hoffman, Monsanto Chem. Co., St. Louis.

Among winners of trophies and certificates for outstanding achievements over the past year in reducing accidents, appeared the names of Procter & Gamble Co., at various individual plants, Lever Bros. Co., Grasselli Works of E. I. du Pont de Nemours & Co., Carbide & Carbon Chemicals Corp., In-Tag div. of Interchemical Corp., American Cyanamid Co., Hercules Powder Co., Ansul Chemical Co., Sharpe & Dohme Co., Merck & Co., Edwal Laboratories and others.

A feature of the five-day safety confab at Chicago was a symposium on "Industrial Dermatoses," participated in by two Chicago physicians, Dr. L. A. Weber, and Dr. Maurice Dorne, and by Dr. C. Guy Lane of Boston. "Primary Irritation Dermatoses," "Dermatitis From Safety Devices," and "Sensitization Dermatoses," were their respective topics. Supplementing this discussion, the National Safety Exposition at the Stevens Hotel included many exhibits and demonstrations by manufacturers of protective creams, soaps and other materials for industrial dermatitis control.

The National Association of Insecticide and Disinfectant Manufacturers presented its institutional exhibit drawing attention to the importance of sanitation and the organization's many services in that field. L. Oppenheimer of West Disinfecting Co., was in general charge of the booth for the Association. A. G. Grady and F. O. Huckins of Sinclair Refining Co., were in attendance on the opening day, while succeeding days of the affair saw other Chicago members of NAIDM taking turns as hosts to the visiting safety specialists.

Exhibitors of soaps, sanitary chemicals and sanitation equipment and persons in charge were as follows:

Stepan Chemical Co., Chicago, showed sulfonated oil hand cleaner and Brytone," a new liquid all-purpose cleaner. Alfred C. Stepan in charge.

G. H. Packwood Mfg. Co., St. Louis, showing "Paxsolv," a new waterless hand cleaner, and a complete line of industrial powdered soaps. A. J. McLaughlin, sales manager, St. Louis, H. B. Lamping, W. O. Keneipp, J. W. Reilly, Chicago.

West Disinfecting Co., Chicago div., complete sanitation line; G. A. Buerki, general manager, Chicago, Chas. S. Gravatt, Wm. Dooley, Henry Winch, K. M. Ingold, C. F. Rogosch, W. E. Albright, Earl W. Drawbaugh, John Manley, Wm. Flotow, Jr.

Lightfoot Schultz Co., New York. Complete line of liquid, bar, powder and waterless soaps. J. D. Compton, Chicago manager, Geo. Falstrom.

E. I. du Pont de Nemours & Co., Wilmington. "Pro-Tex" protective cream, fire retardants, and other items. S. W. Quisenberry.

John H. Breck, Inc., Springfield, Mass., sulfonated oil hand cleaner. Wm. Connery, district sales representative, Lester Brossard.

Milburn Co., Detroit, Mich., protective skin creams, safety clothing, athlete's foot remedies. Geo. M. Cole, sales manager.

Sugar Beet Products Co., Saginaw, Mich. Industrial hand cleaners and dispensers. R. S. Montague, Jr., sales manager, W. C. Potter, Frank Newberry, Bert Foss, John Schmidt, Stan Mathie, Grant Rafferty, John Strickland.

Huntington Laboratories, Huntington, Ind. Non-slip floor polishes, cutting oil disinfectants, soaps, insecticides, floor cleaning machinery, cleaning compounds. W. J. Cerney, Wray Norton.

Hillyard Chemical Co., St. Joseph, Mo. Floor and building maintenance materials and equipment and sanitation supplies. Walter Hillyard, vice-president, Wm. E. Hillyard, secretary-treasurer, E. C. Spratt, sales manager.

C. B. Dolge Co., Westport, Conn. Protective creams, skin cleaners, cutting oil germicides, athlete's foot remedies, weed killers, deodorants. C. L. Weirich, vice-president, Chas. Skinner, Myron Krugler, Peter Bohr.

Hild Floor Machine Co., Chicago, floor scrubbing and polishing machines, industrial vacuum machines. Roy J. Hild.

Walter G. Legge Co., New York, Non-slip floor polishes, and electrically conductive floor treatments. Walter G. Legge.

Bradley Wash Fountain Co., Milwaukee, Wis. Group wash room equipment, Chas. H. Berenger.

Athlete's foot control products were shown also by Peda Spray Co., New York, and by Onox, Inc., San Francisco.

Exhibitors of absorbents for water, grease and oil on floors included Canfield Oil Co., Cleveland, O. Fred

Beutel and Joe Leisch, in charge; Diversey Corp., Chicago, with S. E. Alvis, sales manager, in charge; Waverly Petroleum Products Co., Philadelphia, Wm. V. Grier, vice-president, in charge; and Oil-Dri Corp. of America, Chicago, L. G. Clark, in charge. Wyandotte Chemical Corp., Wyandotte, Mich., also introduced a newcomer to their line, "Sorball," an all-purpose grease and oil absorbent. R. E. Heath, manager, industrial dept. in charge.

P & G Earnings Rise

Procter & Gamble Co., Cincinnati, reported, October 28th, consolidated earnings of $18,514,575 for the three month period ending Sept. 30th after provision of $10,885,000 for taxes. Set aside for inventory price decline is $9,500,000. The resulting net earnings of $9,014,575 equal $1.40 per share of common stock, transferred to earned surplus. For the comparative period last year, consolidated net earnings were $5,670,823, or 88 cents per share of common stock, after providing $3,120,000 for income taxes. No provision was made last year for future price decline.

Lever Builds Oil Refinery

A two million dollar coconut oil refinery and processing plant will be built in Manila by Philippine Refining Co., an affiliate of Lever Bros., Ltd., it was recently announced. The plant is expected to take about a year to complete.

TGA Allergy Research

The Toilet Goods Association, Inc., New York, has made a grant to the Laboratory of Applied Physiology, Yale University, New Haven, which will be used to make a review of existing literature on skin irritation, allergy and sensitivity induced by perfumes, cosmetics and other toilet preparations including soap.

The program consists of the preparation of abstracts of literature on the irritating effects of these products and a comprehensive list of raw materials used in their manufacture. When the abstracting of the literature has been completed, a critical review of the subject will be published as a monograph by the laboratory. This will contain not only the abstracts of various articles but an analysis and evaluation of the literature covering the entire field.

It is expected that the work of abstracting the literature will require about one year and that the preparation and publication of the book covering the work will require the greater part of the second year.

Mr. and Mrs. C. F. Young of Dayton, Ohio, last month celebrated their 50th wedding anniversary at their home in that city surrounded by five sons and wives and thirteen grandchildren. Mr. Young, widely known throughout the soap industry for more than fifty years, is Chairman of the Board of the Davies-Young Soap Co., Dayton. About five years ago, upon completion of a half-century in the soap business, he was heralded as "dean of the American soap industry." He was for several years a member of the board of the Association of American Soap & Glycerine Producers. Three of his sons are active in the Davies-Young Soap Co., Russell, Howard and John. Two other sons are respectively a lawyer and a doctor. Known as Fred Young among soapers, Mr. Young's appearance and activity belie his seventy-odd years.

NEW LIQUID WOOL WASH:—Intensive promotion of this new liquid wool-wash, "Tern," was started recently in New England by Lorraine Compounds, Inc., New York. Developed in France just before the war, it is said to contain no alkalies, to require no rubbing of garments and to be efficient in tepid water. The 4-oz. bottle of Tern retails for 49 cents and is packaged in a cellophane covered frame-view box.

AASGP January Meeting

A two-day meeting will be held this year by the Association of American Soap & Glycerine Producers at the Waldorf-Astoria Hotel, New York, January 28th and 29th. The meeting, a departure from the practice of previous years when the meeting has been simply a one-day session, will include social functions—a cocktail party and buffet supper on the evening of the first day, and a banquet terminating the program on the second day of the convention. Dr. Morris Fishbein, editor of the *Journal of the American Medical Association,* will speak at the banquet. His topic, and details of the rest of the program, have not as yet been announced. The business sessions, however, will feature talks by several government men, a talk by a prominent economist, and industry forums on such subjects as fats and oils, natural and synthetic glycerine, synthetic detergents, etc. James Reilly, Colgate-Palmolive-Peet Co., Jersey City, is acting as chairman of the convention committee.

Stokes & Smith Elect

Stokes & Smith Co., Philadelphia, announced October 21st the election of the following officers: Charles Evans, chairman of the board and treasurer; Carl E. Schaeffer, president; George Z. Sutton, vice-president; L. W. Findlay, vice-president; Charles H. Nitsch, vice-president; and John S. Stokes, Jr. assistant to the president and secretary.

NEW TRADE MARKS

The following trade-marks were published in the October issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Mark Applications

MEB—This in upper case, bold, block letters within a five-sided ruling and above a smaller diamond within which are the initials "MEB" in script letters for household insecticide. Filed Apr. 18, 1947 by Meb Products, Inc., Los Angeles. Claims use since Apr. 4, 1947.

SUNDAY SHOWER—This in upper and lower case, open and shadow letters for liquid preparation for cleaning dogs. Filed May 3, 1947 by Tom Houston, Coral Gables, Fla. Claims use since July 1, 1946.

NEU-CAL—This in upper case, extra bold letters for insecticidal composition. Filed May 22, 1947 by Food Machinery Corp., San Jose, Calif. Claims use since Mar. 7, 1947.

ZETTYN—This in upper case, medium letters for disinfectant. Filed June 13, 1947 by Winthrop Chemical Co., New York. Claims use since May 20, 1947.

QUEEN LILY—This in upper and lower case, extra bold, black letters for bar soap. Filed Mar. 13, 1945 by Pioneer Soap Co., San Francisco. Claims use since 1876.

NOCA—This in lower case, bold, inline letters for detergent for industrial and household use. Filed May 11, 1946 by Calgon, Inc., Pittsburgh, Pa. Claims use since July 1, 1941.

ONE-O-SEVEN—This in large and small capital letters for washing fluid. Filed June 24, 1946 by Lincoln Manufacturing Co., Rankin, Pa. Claims use since Oct., 1938.

CONNOISSEURS—This in upper and lower case, bold, old English letters above the fanicul drawing or a bowl for silver polish. Filed July 24, 1946 by Connoisseurs Gift Shop, Inc., Boston. Claims use since July 15, 1946.

SAVADAY SUDS—This in large and small, upper case letters, the "S" for the first letter of both words being the same, for cleaning preparation for miscellaneous household uses. Filed Sept. 25, 1946 by Barton Chemical Co., Chicago. Claims use since Sept. 1, 1945.

RIT—This in upper case, bold, outline letters for compound used in dry cleaning. Filed Feb. 12, 1947 by Rit Products Corp., Chicago. Claims use since 1935.

SKIPPER—This in upper case, bold letters for soaps and shaving cream. Filed Mar. 20, 1947 by Lander Co., New York. Claims use since 1930.

ESPOIR—This in upper case, medium bold letters for soap. Filed Mar. 22, 1947 by Antonie de Paris, Inc., New York. Claims use since Mar. 12, 1947.

SUDSHINE—This in upper case, bold, stencil letters for synthetic detergent in liquid, paste or powder form. Filed Apr. 19, 1947 by Hardesty Chemical Co., New York. Claims use since Mar. 19, 1947.

COED—This in bold, upper and lower case letters for shoe polish. Filed Apr. 30, 1947 by Kessler-Friedman-Meyer Co., St. Louis. Claims use since Apr. 22, 1947.

KAZOO—This in upper case, open letters for automobile cleaning compounds. Filed May 2, 1947 by Scientific Supply Co., Denver. Claims use since Apr. 1, 1947.

REBEL—This in upper case, bold letters for toilet soap. Filed May 7, 1947 by Campana Sales Co., Batavia, Ill. Claims use since Feb. 18, 1947.

CINDERELLA—This in upper and lower case, bold letters for liquid detergent for dishwashing. Filed May 8, 1947 by Cameo, Inc., Toledo. Claims use since Apr. 11, 1947.

ANSER—This in upper and lower case, extra bold, black letters for liquid cleaning preparation. Filed May 12, 1947 by Clorox Chemical Co., Oakland, Calif. Claims use since May 23, 1946.

AWARD—This in upper and lower case, italic, bold letters running through a break in a slanted rule for shaving soap. Filed May 15, 1947 by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since May 10, 1947.

CULICIDE—This in upper case, bold, stencil letters for insecticide. Filed Nov. 9, 1946 by Socony-Vacuum Oil Co., New York. Claims use since Apr. 4, 1945.

Fanciful drawing of a baby elephant within a circle for insecticides. Filed Feb. 18, 1947 by Geigy Co., Inc., New York. Claims use since Jan. 17, 1947.

RODEX—This in upper case, extra bold, black letters for rodent poison. Filed June 3, 1947 by West Disinfecting Co., Long Island City, N. Y. Claims use since Mar. 15, 1947.

MEDIMETICS—This in upper case, bold letters for shampoos. Filed June 21, 1947 by Dermetics, Inc., New York. Claims use since May 20, 1947.

SUPERLA—This in upper case, bold, stencil letters for mineral oils for insecticides. Filed June 28, 1947 by Standard Oil Co., Whiting, Ind. Claims use since Jan. 6, 1930.

AMOCO—This in upper case, extra bold letters across the face of an oval, through which vertically runs a torch for automobile polish. File Dec. 17, 1946 by American Oil Co., Baltimore. Claims use since July 2, 1946.

FLY DED—This in upper and lower case italic and upper case open block letters as part of a rectangular label design for insecticides. Filed July 13, 1946 by Boyle-Midway, Inc., Jersey City, N. J. Claims use since May 27, 1928.

"RENOUVEAU"—This in upper case, bold letters for toilet soaps. Filed Jan. 19, 1946 by Parfums de Dana, Inc., New York. Claims use since Dec. 31, 1945.

ALECO—This in upper case, bold letters for powder for cleaning dental gold castings. Filed Oct. 4, 1946 by A. L. Engelhardt Co., Los Angeles. Claims use since Sept. 29, 1945.

LANOLIN PLUS—This in upper case, bold letters for toilet soap. Filed Nov. 19, 1946 by Lanolin Plus Cosmetics, Inc., Chicago. Claims use since Aug. 12, 1942.

Drawing of a flask within a hexagon across the face of which is a blank rectangular area for cleaning, washing and polishing compound for general household use. Filed Jan. 18, 1947 by Oronite Chemical Co., Wilmington, Del. Claims use since Jan. 5, 1945.

POR-SAN—This in upper case, extra bold letters for powdered cleanser for use on porcelain surfaces. Filed Apr. 15, 1947 by Huntington Laboratories, Inc., Huntington, Ind. Claims use since Aug. 15, 1944.

REPCOL—This in upper case, extra bold, black, stencil letters for soap substitute. Filed May 15, 1947 by Refined Products Corp., Lyndhurst, N. J. Claims use since Apr., 1941.

LIQUIDTONE—This in upper case, extra bold, black letters for shampoo. Filed Nov. 14, 1946 by Princess Pat, Ltd., Chicago. Claims use since July 16, 1927.

FLIT—This in upper case, reverse letters as part of a label for surface insecticide. Filed Nov. 15, 1946 by Stanco, Inc., New York. Claims use since Mar. 28, 1946.

MEKON—This in upper case, extra bold, black stencil letters for crude waxes from mineral sources for use in manufacturing furniture wax. Filed Feb. 7, 1946 by Warwick Wax Co., New York. Claims use since Jan. 17, 1946.

DC—This in upper case, extra bold letters for polishing compositions for glass, metal, rubber, plastic and similar surfaces. Filed Sept. 6, 1946 by Dow Corning Corp., Midland, Mich. Claims use since July, 1945.

ONESHOT—This in upper case, open letters for upholstery cleaners. Filed Feb. 24, 1947 by Best Upholstery Cleaners & Dyers, Memphis, Tenn. Claims use since Jan. 21, 1947.

TING—This in upper and lower case, extra bold, italic letters for germicidal soap. Filed Feb. 24, 1947 by The Pharma-Craft Corp., New York. Claims use since Nov. 12, 1946.

ZIPP-REME—This in upper case, extra bold letters within lightning like border rules top and bottom for upholstery, carpet and paint cleaner in liquid and semi-liquid form. Filed Feb. 25, 1947 by Zipp-Reme Chemical Works, Greensburg, Pa. Claims use since Mar., 1939.

SMS—This in lower case, open letters on a panel superimposed on the drawing of a flower for household cleaner. Filed Apr. 26, 1947 by S-M-S Products, Inc., Harrison, N. Y. Claims use since Apr. 10, 1947.

EVICTOR—This in upper case, bold letters in the form of an arc for aerosol bombs. Filed May 21, 1946 by O'Sullivan, Inc., Baltimore. Claims use since Dec. 14, 1945.

SAN-A-LIZER—This in upper case, extra bold, letters for deodorant for refuse containers. Filed May 24, 1946 by Sanalizer Corp., Los Angeles. Claims use since Sept., 1939.

POLARIZED—This in upper case, bold letters for radiator cleaner. Filed Dec. 4, 1946 by Pyro-Penn Products Co., San Jose, Calif. Claims use since Oct. 1, 1941.

RADIO WAVE—This in large and small, upper case letters for shampooing prepartion. Filed Jan. 11, 1947 by Pilot Products Co., Salt Lake City U. Claims use since Jan. 1, 1944.

ORTHO-FU..E—This in upper case, bold letters for insecticides and disinfectants. Filed Feb. 3, 1947 by California Spray-Chemical Corp., Wilmington, Del. Claims use since Jan. 15, 1947.

DUBOTH—This in upper case, extra bold letters for composition for removing boiler incrustations. Filed Apr. 1, 1947 by Metropolitan Refining Co., Long Island City, N. Y. Claims use since about Mar., 1920.

Fanciful drawing of a woman's head and hair in water for shampoo and hair dressing. Filed Apr. 2, 1947 by Kay Daumit, Inc., Chicago. Claims use since Feb. 28, 1941.

THE 5th FREEDOM—This in upper case black, and italic, upper and lower case, bold and script letters for insecticides. Filed June 30, 1947 by Chemola Manufacturing Co. Houston, Tex. Claims use since June 27, 1947.

AMOCO—This in upper case, lined letters across the face of an oval, through which runs vertically a torch for automobile polish. Filed Jan. 21, 1947 by American Oil Co., Baltimore. Claims use since July 2, 1946.

KING-SILVER—This in upper case, extra black, bold letters for metal polish. Filed Feb. 21, 1946 by King Chemical & Engineering Co., Cleveland. Claims use since Nov. 24, 1945.

PUR-BOL—This in upper and lower case, open letters for toilet bowl cleaner. Filed Oct. 1, 1946 by Pur-Bol Products Co., Canton, O. Claims use since Feb. 13, 1931.

TRANSIT-KLEEN—This in upper and lower case, bold letters for compound for cleaning and preserving the finishing of motor vehicles. Filed Oct. 2, 1946 by Dubois Co., Cincinnati. Claims use since July 13, 1946.

ELMOCID—This in upper case, medium letters forming a cross with the same word running perpendicular to it in a circle for cleaning compound used for vats and tanks in the beverage industry. Filed Oct. 12, 1946 by National Filter Corp., New York. Claims use since Aug. 15, 1939.

Oil Processors Meet

The Processing Oils and Chemicals Association, Inc., New York, held its 16th annual meeting

J. EVERETT ALLEN

at Hotel Claridge, Atlantic City, N. J., on October 16th and 17th. J. Everett Allen, Arkansas Co., Newark, N. J. was elected president for the coming year, J.M. McChesney, Leatex Chemical Co., vice-president, and H. B. Sweatt, continues as secretary-treasurer.

Amecco Moves West

Amecco Chemicals, Inc., New York, announced in October the closing of its New York sales office and transfer of offices and manufacturing operations to Henderson, Nev. Robert W. Fredericks has been appointed sales manager and Dr. Ernest B. Rubloff, technical sales development director. Both have had western market sales experience. Amecco has disposed of its Rochester, N. Y. plant and acquired the Henderson plant of Hardesty Chemicals Co. At Henderson, Amecco will make synthetic detergents, chlorinated organics and synthetic organic chemicals which the plant is equipped to produce on a large scale.

Solvay Names Draper

Solvay Sales Corp., New York, has announced the appointment of Neal M. Draper as manager of the St. Louis Branch. Mr. Draper, who has been a salesman in the St. Louis territory for the past 12 years, succeeds M. S. Johnson, who has been transferred to the Boston Office. Elmer Seener has been appointed assistant branch manager of the St. Louis branch.

Kramer Leaves USDA

Albert J. Kramer recently announced his resignation as patent advisor for the U. S. Department of Agriculture. He is now associated with Hall & Houghton, Washington lawyers specializing in patent trademarks and copyright clauses. Mr. Kramer is the author of the book, "Inventions at Your Service," published in 1946 and reviewed in this magazine.

FLO KLEAN—This in upper and lower case, extra bold letters for sweeping compound. Filed Oct. 16, 1946 by Withers & Wellford Oil Co., Memphis. Claims use since Jan. 2, 1936.

TABOO—This in upper case, medium letters for laundry soap. Filed Nov. 22, 1946 by Consolidated Cosmetics, Chicago. Claims use since Nov. 13, 1946.

KLEEN-SITE—This in upper case, bold, large and small letters for eye glass cleaner and polish. Filed Nov. 29, 1946 by Benjamin W. Kahn, Chicago. Claims use since Jan. 1, 1934.

FLORIDEX—This in upper case, extra bold letters for granular preparation for absorbing oil and grease from garage and factory floors. Filed Dec. 3, 1946 by Chemical Sales Corp., Buffalo. Claims use since Oct. 28, 1946.

FINE ART—This in upper and lower case, medium script letters for soap. Filed Jan. 7, 1947 by Armour and Co., Chicago. Claims use since 1900.

HECTACREAM—This in upper case, bold letters for cleansing cream for removing hectograph and other duplicating ink stains. Filed June 18, 1947 by Krayer Manufacturing Co., Elizabeth, N. J. Claims use since Nov. 14, 1946.

SANICAP—This in upper case, bold letters for preparations for removing lice from human heads. Filed June 28, 1946 by Vogel Laboratories, Lake Mohegan, N. Y. Claims use since June 1, 1946.

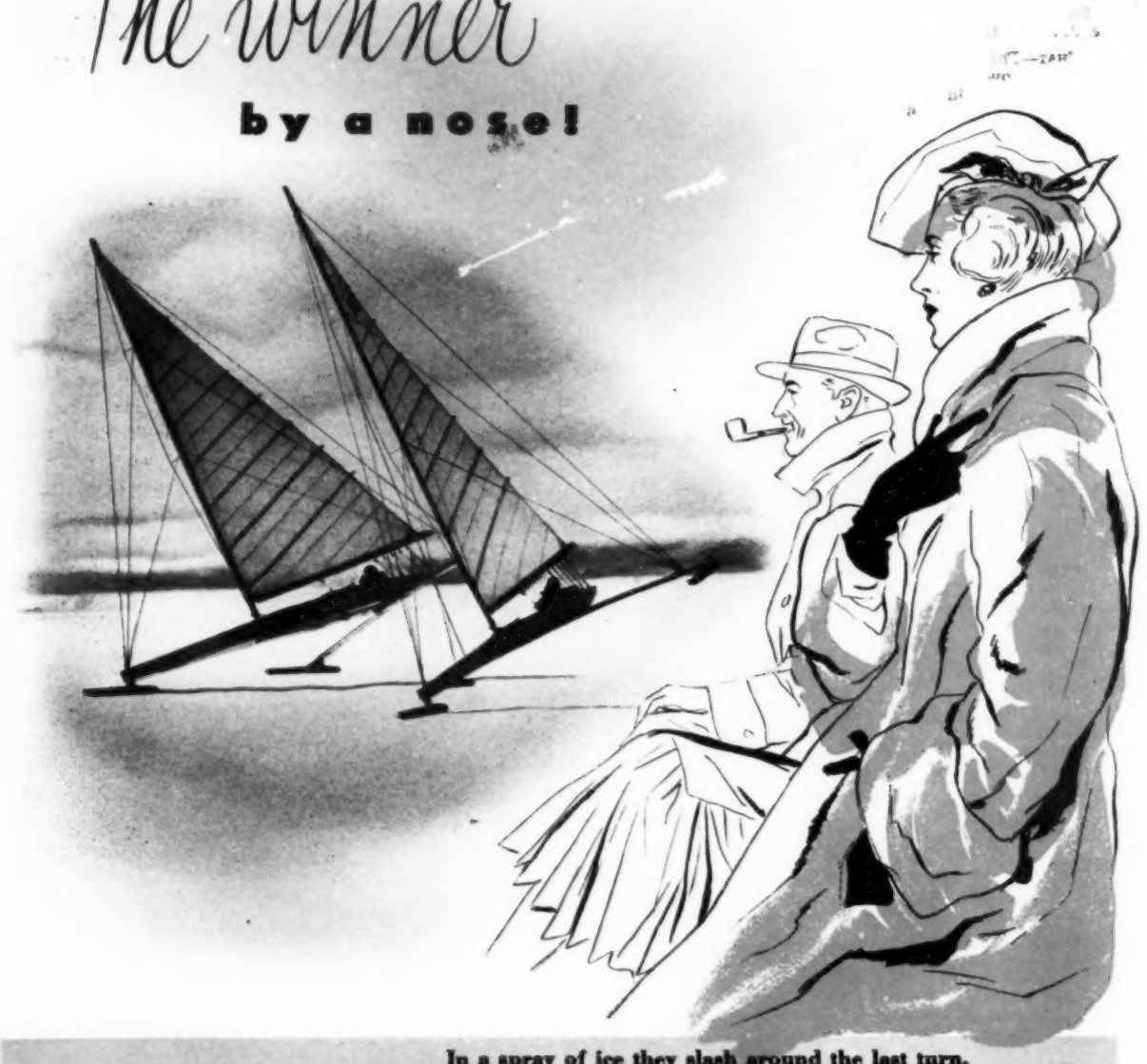
SCENT EVADOR—This in upper and lower case, medium, script letters for room deodorant. Filed Nov. 19, 1946 by B and R Fabrications, Inc., Reno, Nev. Claims use since Aug. 31, 1946.

NAY POSITIVE—This in upper case, bold letters above a pennant for rat bait. Filed Apr. 7, 1946 by Nay Laboratories, Inc., Cincinnati. Claims use since Dec. 16, 1946.

SMICO—This in upper and lower case, open letters for insecticides. Filed June 19, 1947 by Smith Mfg. Co., Utica, N. Y. Claims use since Apr. 1, 1921.

The winner

by a nose!



In a spray of ice they slash around the last turn, flash into the straight-away for the drive to the finish. Suddenly one competitor shoots ahead, to win handily. The turning point in the soap sales race is *fragrance—that's* what counts at the counter. We can help put your soap across, with a "smell that sells"!

van AMERINGEN-HAEBLER, INC., (Soap Division) 315 Fourth Ave., N. Y. 10

Your ideal can be achieved **ask vA-H**

BA-ZIL—This in upper case, bold letters for automobile wax and cleaner. Filed Feb. 19, 1946 by Brazil Wax Co., Santa Monica, Calif. Claims use since Jan. 28, 1946.

C[illegible]'s in upper case, bold letters for powdered detergents for personal, household and industrial uses. Filed May 9, 1946 by General Aniline & Film Corp., New York. Claims use since Apr. 25, 1946.

BROOKS BROTHERS' "346"—This in upper and lower case, script letters and numerals within concentric circles for shaving cream. Filed Aug. 12, 1946 by Brooks Brothers, New York. Claims use since Sept. 1940.

SUZY-SUDS—This in upper case, extra bold, black letters for washing compound in powder form. Filed Jan. 22, 1947 by Pa-Tron Products Co., Dallas, Tex. Claims use since Nov. 1, 1946.

CHAT—This in upper case, open and shadow, over-size letters for liquid detergents for household and industrial cleaning uses. Filed Mar. 1, 1947 by General Aniline & Film Corp., New York. Claims use since Dec. 26, 1946.

20-20—This in extra large and bold numerals for cleaner and polish for lenses. Filed June 18, 1947 by Modern Supply Co., Pittsburgh. Claims use since on or about Dec. 5, 1945.

MEDIMETICS—This in upper case, bold letters for skin soap. Filed June 21, 1947 by Dermetics, Inc., New York. Claims use since May 20, 1947.

APHRA—This in upper case, reverse letters for shampoo. Filed Mar. 9, 1946 by Chemical Specialties Co., New York. Claims use since Feb., 1940.

RINN-KLOR 50—This in upper and lower case, bold letters and numerals for germicide. Filed Aug. 8, 1946 by Tykor Products, Inc., New York. Claims use since July 1, 1945.

BEAUTYKOTE—This in upper and lower case, bold letters for insecticide in powder and liquid form. Filed Aug. 9, 1946 by Beautykote Corp., Newark, N. J. Claims use since July 12, 1946.

VAPO-FUME—This in upper case, bold letters at the top of a shield like design for concentrated vaporizer insect spray. Filed Aug. 23, 1946 by National Disinfectant Company of Tex., Dallas. Claims use since Jan. 22, 1935.

JIFFY—This in upper and lower case, extra bold, over-size letters for flush bowl cleaner. Filed Jan. 15, 1947 by Royal Home Products, Inc., Richmond, Va. Claims use since Sept. 1, 1915.

Trade Marks Granted

428,496. Cleaner of painted surfaces. Filed by Pacific Allied Products, Seattle, Apr. 6, 1946. Serial No. 499,797. Published Dec. 31, 1946. Class 4.

428, 498. Sweeping compound. Filed by West Disinfecting Co., Long Island City, N. Y., Apr. 9, 1946. Serial No. 499,930. Published Dec. 26, 1946. Class 4.

Moser Ayer General Mgr.

John T. Moser, for many years with Lever Brothers, Co., Cambridge, Mass., has been appointed general manager of Harriet Hubbard Ayer, Inc., New York cosmetic firm, which was recently acquired by Lever Bros., it was learned late in October. At the same time, it was revealed that Charles W. Darr has left the organization, with which he had been affiliated in an executive capacity for many years. Mr. Darr, whose future plans are unannounced as yet, has just returned from a trip to Roanoke, Va.

Two other former Harriet Hubbard Ayer executives who are no longer wtih the organization are John Henry, sales manager, who had been with the company for about 40 years and John Eagen, former sales promotion manager. Mr. Henry has returned to his native New Orleans, where he has retired. Mr. Eagen's future plans have not as yet been revealed.

Phila. Quartz Personnel

Philadelphia Quartz Co., Philadelphia manufacturers of silicates of soda, recently announced the addition of Albert C. Pierce, who will assume territorial sales duties in the metropolitan New York area. Everett W. Turley, previously sales representative in the New York area, has been transferred to Chicago. Kenneth King is a new addition to the sales staff in the North and South Carolina area, with headquarters in Charlotte. The company has also announced the appointment of Elmer G. Strasburg to the sales staff as a laundry technician.

Cosmetic Chemists Meet

The Society of Cosmetic Chemists will meet Wednesday, Dec. 3, 1947, at the Biltmore Hotel, New York. Dr. E. G. Klarman, Lehn & Fink Products Corp., Bloomfield, N. J., president of the society, has announced a program of six papers: "The Chemist as a Professional Man," by Dr. Raymond E. Kirk, head of the department of chemistry and dean of the graduate school, Brooklyn Polytechnic Institute, Brooklyn; "Bacteriological and Dermatological Testing of Cosmetics," by Dr. L. C. Barail, U. S. Testing Co., Hoboken, N. J.; "An Inquiry into the Origin of the Literature on Perfumery," by Edward Sagarin, Givadaun-Delawanna, Inc., New York; "Surface-Active Agents in Cosmetics," by H. C. Speel, Alrose Chemical Co., Providence; "Development of Machineless Permanent Waving," Dr. E. G. McDonough, Evans Chemetics, Inc., New York, and "The Analysis of Mixtures of Hydrocarbons, Beeswax, and Spermaceti," by Dr. S. H. Newberger, Food & Drug Administration, USDA, Washington.

428,670. Hair shampoo. Filed by R & R Products Co., Corpus Christi, Tex., Dec. 5, 1945. Serial No. 492,738. Published Jan. 7, 1947. Class 6.

428,706. Insecticides. Filed by Monsanto Chemical Co., St. Louis, Mar. 14, 1946. Serial No. 498,242. Published Nov. 12, 1946. Class 6.

428,707. Floor and furniture wax. Filed by Midland Laboratories, Dubuque, Ia., Mar. 15, 1946. Serial No. 498,300. Published Nov. 19, 1946. Class 16.

428,708. Floor cleaning and waxing preparation. Filed by G. H. Wood & Co., Toronto, Canada, Mar. 18, 1946. Serial No. 498,475. Published Jan. 7, 1947. Class 16.

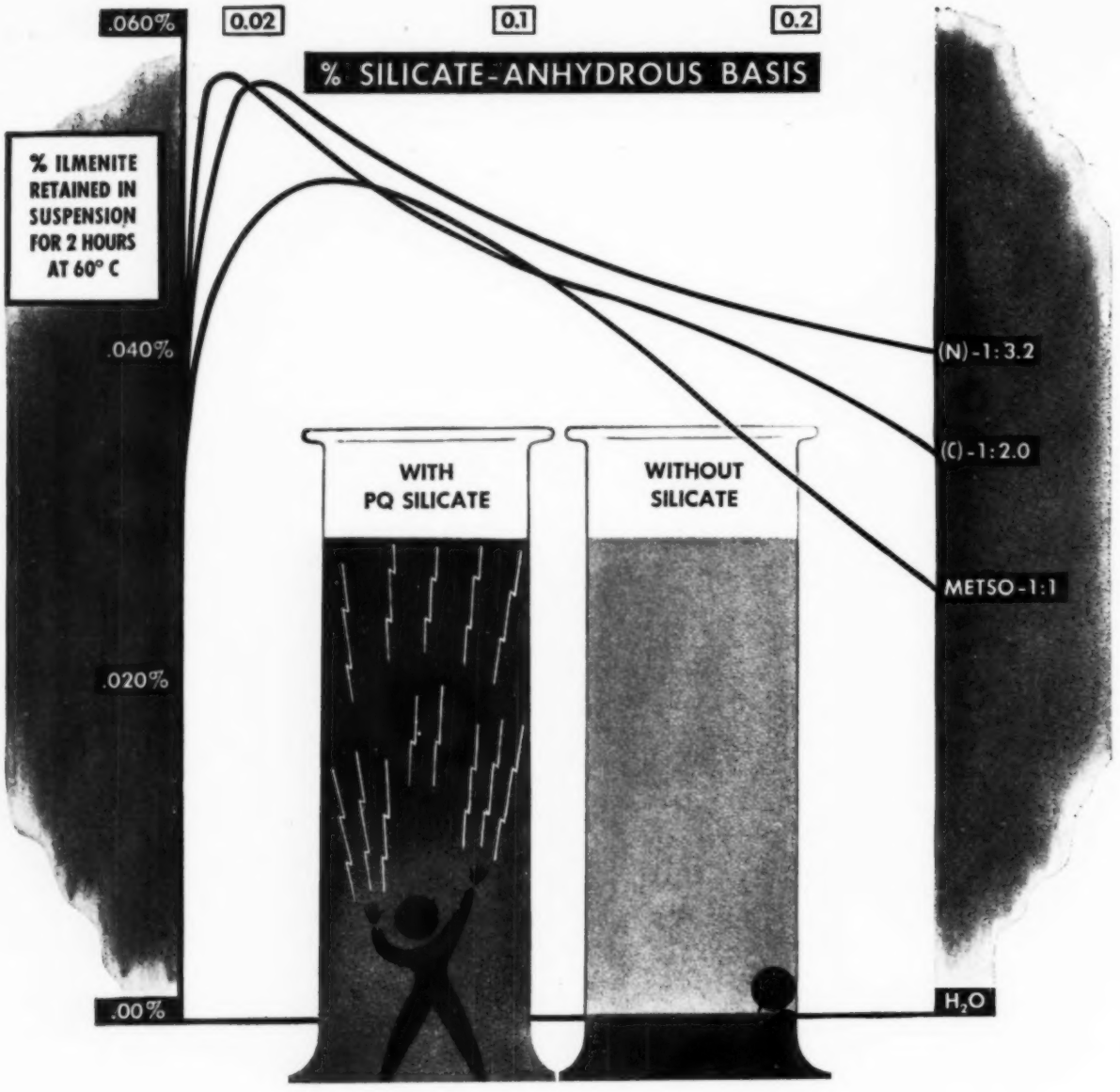
428,726. Insecticides. Filed by Glidden Co., Cleveland, Apr. 12, 1946. Serial No. 500,075. Published Dec. 24, 1946. Class 6.

428,739. Insecticides. Filed by American Cyanamid Co., New York, Apr. 26, 1946. Serial No. 500,922. Published Dec. 24, 1946. Class 6.

428,745. Liquid pine oil disinfectant. Filed by Pynol Co., Quincy, Ill., Apr. 30, 1946. Serial No. 501,199. Published Dec. 24, 1946. Class 6.

428,750. Insecticides. Filed by California Spray-Chemical Corp., Richmond, Calif., May 4, 1946. Serial No. 501,454. Published Dec. 31, 1946. Class 6.

428,765. Insecticides. Filed by C. B. Dolge Co., Westport, Conn., May 9, 1946. Serial No. 501,721. Published Jan. 7, 1947. Class 6.



PQ SILICATES AT WORK ON DIRT

Good detergent action involves keeping solid dirt in the state of suspension until it can be freely rinsed away. In distilled water, soap is a satisfactory suspending agent, but in commercial waters soap and silicate are better over a wide range of concentration. Furthermore, the soluble silica (SiO_2) has the added advantage of preventing the redeposition of the removed dirt onto the cleaned object.

PQ Silicates long have been used as economical dirt suspenders. The behavior of three widely-accepted detergent PQ Silicates in suspending dirt is charted above. The soil used was Ilmenite black; the time 2 hours, the temperature 60° C. Note that all silicates work efficiently over laundry concentrations.

May we tell you about this and other valuable detergent properties contributed by PQ Silicates to cleaning compounds and soaps? Send for our Bulletin No. 170 "The Role of Silica."

SILICATES PQ OF SODA

PHILADELPHIA QUARTZ CO.

DEPT. B, 129 SOUTH THIRD STREET, PHILADELPHIA 6, PA.

BIDS AND AWARDS

Post Office Soap Bids

The following bids were received on 1,100 gallons of toilet soap in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C.: Rose Chemical Co., New York, 62 cents a gallon in non-returnable drums; Davis-Young Soap Co., Dayton, 52 cents; Crown Supply, Washington, D. C., 67 cents; Marjo Products, Chicago, 45 cents, fob Chicago and 56 cents, fob Washington; Fisher Industries, Cincinnati, 49 cents; Trio Chemical Works, Brooklyn, 63 cents, fob Brooklyn, and 70 cents, fob Washington, drums included, 4 cents a gallon deducted if drums are returned; Crystal Soap & Chemical Co., Philadelphia, 39.1 cents, drums included; Harley Soap Co., Philadelphia, 42 cents, fob Philadelphia, and 48 cents, fob Washington, drums included; Glenn Labs., St. Louis, 55 cents; Armour & Co., Chicago, 52.9 cents, fob North Bergen, N. J., and 58.5 cents fob Washington; Bri-Test Products, Inc., New York, 44 cents, fob New York, and 49 cents, fob Washington; R. M. Hollingshead Corp., Camden, N. J., 52 cents; Chemical Manufacturing & Distributing Co., 42 cents, fob Washington, and Wm. F. Gable, Altoona, Pa., 76 cents on 15 per cent coconut oil perfumed soap.

Paste Soap Bids

The following bids were received on 14,000 pounds of paste soap in a recent opening for miscellaneous supplies by the Bureau of Federal Supply of the U. S. Treasury Department: Thompson-Haywood Chemical Co., Kansas City, 13.59 cents; Huntington Laboratories, Huntington, Ind,. 19 cents, Atlanta, Chicago, Boston, Cleveland, Kansas City, New York and Washington, D. C.; 20.5 cents, Denver, Ft. Worth; 21 cents, Los Angeles, San Francisco and Seattle; Peck's Products Co., St. Louis, 12 cents; Turco Products, Los Angeles, 20.75 cents; Grace-Lee Products, Minneapolis, 14 cents; Dorsett-Jones, Baltimore, 20 cents; R. M. Hollingshead Corp., Camden, N. J., 17 cents; Selig Co., Atlanta, 12.5 cents; E. F. Drew & Co., New York, 11.62 cents; Crystal Soap & Chemical Co., Philadelphia, 12.9 cents.

Federal Supply Soap Bids

In a recent opening for miscellaneous supplies by the Treasury Department, Bureau of Federal Supply, Washington, D. C., the following bids were received on item 1 (54S-1430) 2,400 pounds of chip laundry soap for New York, 24,000 pounds for Cleveland and 10,000 pounds for Denver; item 2, (51S-1656) 6,000 pounds of laundry soap for Boston, 8,340 pounds for Chicago, 3.600 pounds for Marietta, 13,080 pounds for Fort Worth, 1,260 pounds for San Francisco and 13,260 pounds for Los Angeles; item 3, (51S-1885), 562 ½ pounds of toilet soap for Fort Worth, 9,375 pounds for Kansas City and 1,537½ pounds for Los Angeles; Procter & Gamble Distributing Co., Cincinnati, item 1, all destinations, 20.45 cents; Stahl Soap Co., Glendale, N. Y., item 1, 21.95 cents New York, 22.5 cents Cleveland and 24 cents Denver in 120-pound bags; item 3, 21.18 cents Fort Worth, 20.67 cents Kansas City and 22.74 cents Los Angeles; Kamen Soap Products Co., New York, item 1, all destinations, 29 cents, item 2, all destinations, 20 cents; Swift & Co., Chicago, item 1, all destinations, 19.49 cents in 180-pound barrels, item 3, all destinations, 20.64 cents, 100 six-ounce bars; Pioneer Soap Co., San Francisco, item 1, 24 cents Denver, 110-pound bags, item 2, 13 cents San Francisco and 13.8 cents Los Angeles, 16-ounces, item 3, 22 cents Los Angeles; Gillam Soap Works, Fort Worth, item 1, 23 cents Denver, item 2, 11 cents Fort Worth; Swift & Co., Los Angeles, item 3, $7, 72 cases Los Angeles unwrapped; Old Dominion Paper Co., 26.98 cents, item 2, all destinations, Norfolk, Va., item 1, all destinations, 17.98 cents; Cleveland Soap Manufacturing Co., Cleveland, item 1, 24 cents New York, 23 cents Cleveland, and 23.25 cents Denver, approximately 125-pound barrels; Turco Products, Los Angeles, item 1, 24.75 cents Denver; Armour & Co., Chicago, item 1, 23.13 cents New York and 23.33 cents Cleveland, 170-pound fiber drums, item 2, 13.66 cents Boston, 13.33 cents Chicago and 13.83 cents Marietta and Fort Worth; Standard Soap Co. of Camden, Camden, N. J., item 1, 18.5 cents New York, 18.72 cents Cleveland, and 20.54 cents Denver, item 2, 12.75 cents Boston, 13 cents Chicago, 13.06 Marietta, 14.13 cents Fort Worth and 14.75 cents San Francisco and Los Angeles; Lee Soap Co., Denver, item 1, 16.5 cents Denver.

Sanitation Powder Bids

In a recent opening for miscellaneous supplies by the Bureau of Federal supply, U. S. Treasury Department, Washington, D. C., the following bids were received on these quantities of sanitation powder (5LP-2546) A.) 4,448 pounds, Washington, D. C.; B.) 360 pounds, New York; C.) 2,000 pounds, Cleveland; D.) 150 pounds, Chicago; E.) 384 pounds, Marietta; F.) 431 pounds, Fort Worth; G.) 660 pounds, Kansas City; H.) 324 pounds, Denver; I.) 120 pounds, San Francisco; J.) 69 pounds, Seattle; N. Brittingham & Sons, Philadelphia, A. to C. 17 cents; D. 19 cents; E. to I. 21 cents; J. 24 cents; City Chemical Corp., New York, A. 65 cents; B. 64 cents; C. & D. 65 cents; E. 66 cents; F. 57 cents; H. 69 cents; I. & J. 70 cents; Imperial Products Co., Philadelphia, A. to C. 31 cents; D. & E. 31.5 cents F. 32.5 cents; G. 32 cents; H. to J., 40 cents; Boni Sanitary Products Co., York, Pa., A. 12.4 cents; B. 12.7 cents; C. 13 cents; D. 13.3 cents; E. 13.25 cents; F. 14.3 cents; G. 14 cents; H. 15 cents; I. 14.1 cents; J. 15.6 cents.

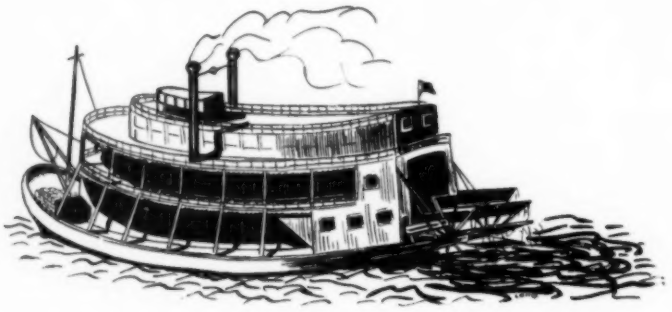
N. Y. Aromatics Moves

New York Aromatics Corp., New York, has moved its executive offices to 5 Beekman St., New York 7, N. Y.

W H&C Co INC

Est. 1838

- Olive Oil
- Neatsfoot Oil
- Coconut Oil
- Cottonseed Oil
- Palm Kernel Oil
- Stearic Acid
- Oleo Stearine
- Soya Bean Oil
- Castor Oil
- Sesame Oil
- Lard Oil
- Palm Oil
- Corn Oil
- Peanut Oil
- Grease
- Tallow
- Red Oil
- White Olein
- Fatty Acids
- Soap Colors
- Chlorophyll
- Soda Ash
- Sal Soda
- Talc
- Caustic Potash
- Caustic Soda
- "CEREPS"
- Superfat



SINCE THE DAYS OF THE STERNWHEELER

. . . dependable suppliers to SOAP MAKERS

VEGETABLE OILS
COCOANUT OIL
SESAME OIL
APRICOT KERNEL OIL

ANIMAL OILS
RED OIL
FATTY ACIDS

REFINED TALL OIL
MINERAL OILS
STEARIC ACID
BABASSU OIL
LANOLIN

Alkalies and Other Chemicals
Textile and Laundry Starch and Sours
Silicate of Soda "Metso", all types
"Quadrafos", Granular or beads
a stable polyphosphate for water conditioning and mild but effective detergency
AIR DRYETTES and CALCIUM CHLORIDE
CHLOROPHYLL-CAROTENE and other chloroplast pigments
LECITHIN

THE MAYPONS—Unique surface active agents; prolific foam; high detergency and emulsifying powers; suitable for cosmetic and industrial use.

Let us mix your private formulas

WELCH, HOLME & CLARK COMPANY, Inc.

Importers — Dealers — Brokers

439 West Street — New York 14, N. Y.

Warehouses: New York, N. Y. — Newark, N. J.

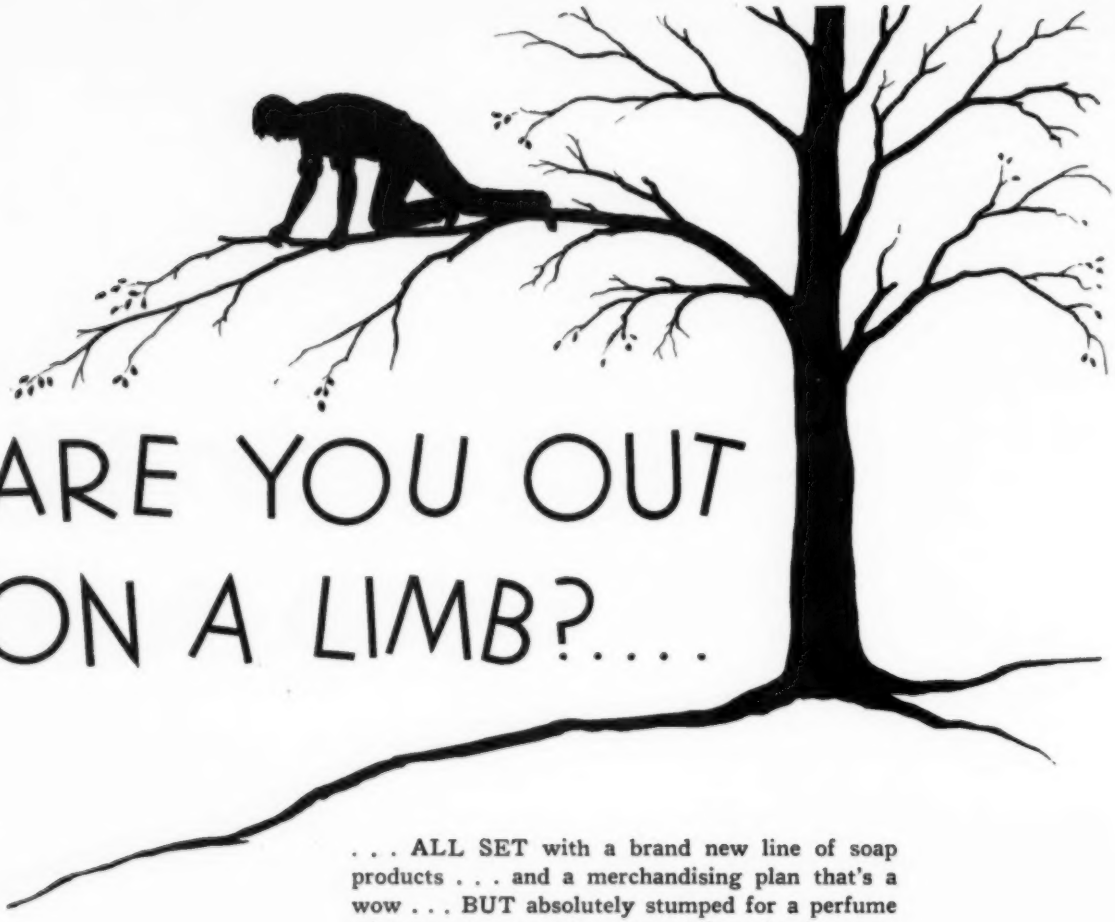
RAW MATERIAL MARKETS

As of November 4, 1947

TALLOW prices increased during the past month, but the rate of advance was not as great as during the previous three to four week period, when prices ran up nine cents. Early this month, 24 cents was bid on fancy grade tallow by one of the large soapers, according to reports, which represents a gain of two cents over the price reported bid on Sept. 30. However, during the month, a break in tallow prices was reported. In one day during mid-October prices were reported to have slipped two cents a pound on tallow to a figure of 20 cents. Since then, tallow prices have resumed the price advance which began early in September, when tallow was selling for around 12 cents, a price to which it had fallen earlier in the spring from a record level of about 28 cents. Now, there is talk of a sudden stiffening in prices, with further increases in the immediate future in view. Back of the tallow price advances are fears of Government allocation of supplies of soap making materials, according to one report. As a result of this apprehension, soap manufacturers are going into the market for tallow and grease, of which there are only small quantities available. Purchases of rendered pork fat are believed being made at competitive prices—the first time in a long time, incidentally, that the latter product has found its way into the soap kettle. Its reported use reflects a scarcity of other commodities.

Meanwhile increased allocations of copra, covering an additional 112,000 metric tons and including an increase of 69,300 metric tons for the United States, was announced in Washington, Oct. 30, by the International Emergency Food Council. The further distribution brings the total of all Philippine copra recommended for 1947 to 754,000 tons.

Revised allocation of fats and oils to be shipped to more than 60 importing nations during 1947, released recently by the International Emergency Food Council, showed that a total of 3,473,000 tons of fats and oils will be shipped. The 1947 allocation is 900,000 tons larger than the amount of oil actually shipped in 1946. Most of the increased tonnage will be received by European nations whose total fat supply has shown little improvement. Production of fats and



ARE YOU OUT ON A LIMB?....

. . . ALL SET with a brand new line of soap products . . . and a merchandising plan that's a wow . . . BUT absolutely stumped for a perfume with popular appeal at the *right price* for your product? If that's the situation you are in, we've a strong hunch our laboratories can help you, for only recently we developed a new series of out-of-the-ordinary soap odors. All are remarkably tenacious and priced surprisingly low for the qua'ity and beauty of their fragrance. Indeed, one of these, modified to your liking, might be just the odor you are looking for. But modified or not, they offer a wide choice of fragrance at a price that hardly reflects their true worth as potential sales builders for your finished goods. A line on your letterhead, outlining your needs, will bring prompt response and appropriate samples of our perfume products.

FRITZSCHE Brothers, Inc.

Est. 1871

PORT AUTHORITY BUILDING, 76 NINTH AVENUE, NEW YORK 11, N. Y.

BRANCH OFFICES *and* °STOCKS: *Atlanta, Ga., °Boston, Mass., °Chicago, Ill., Cincinnati, O., Cleveland, O., Dallas, Tex., Detroit, Mich., °Los Angeles, Calif., Philadelphia, Pa., San Francisco, Calif., °St. Louis, Mo., °Toronto, Canada and °Mexico, D. F.*
FACTORIES: *Clifton, N. J. and Seillans (Var), France.*

ably smaller than in 1946, so that even with an increased allocation consumption in Europe will show but a slight rise.

According to the secretary-general of the International Emergency Food Council, a continued world shortage of major fats and oils is in prospect for 1948, perhaps even more acute than in 1947. Apart from the hope of substantial improvement in supplies from the Netherlands East Indies, no major increase in production is in sight for the coming year, and due to the general agricultural situation a substantial decline is in prospect for both North American and European production. Decreases in production of edible and inedible fats is expected, in the case of animal fats as a result of the cereal and feed shortages from 1947 harvests. 1947-48 production of fats and oils in the United States is expected to be smaller than the 1946-47 year, which will mean that much greater imports of edible and industrial fats will be required in the U. S. if we are to maintain our present level of food consumption and industrial activity, and especially if it is to be a source of supply under a planned recovery program such as the Marshall plan. It is stated that only 50,000 tons of fats have been allocated to the bizonal Germany for 1947 as compared to imports of almost 1,000,000 tons prior to the war. Indigenous production there is now less than 400,000 tons, compared to more than 900,000 tons during the pre-war period.

In a recent summary of the fats and oils outlook, the U. S. Department of Agriculture points out that production of animal fats is likely to be somewhat smaller in 1947-48 than in the season just ending, partly as a result of the relatively small corn crop this fall. With less corn, hogs and cattle probably will be sent to market earlier and at lighter weights than in 1946-47. Consequently less fat per animal slaughtered probably will be recovered. Cattle slaughtered may be slightly less in the year beginning October, 1947, since the number of cattle on farms has been considerably reduced by heavy slaughter during the past 12 months. Imports of fats, oils and oilseeds in terms of oil for the first six months of 1947 totaled 831 million pounds compared with 364 million pounds a year earlier. Imports will be smaller in the latter half of 1947 than in the first half, but total imports for the year will be well above the 1946 total of 971 million pounds.

Essential oil prices have remained fairly steady with buying improving somewhat in certain fields. However, sales were for small quantities, with buyers reported shying away from building up large inventories. Reports of supplies of citronella from sources other than Ceylon has kept the price of that oil from increasing perceptibly. Patchouli and linalyl acetate have both shown declines in price during the past month.

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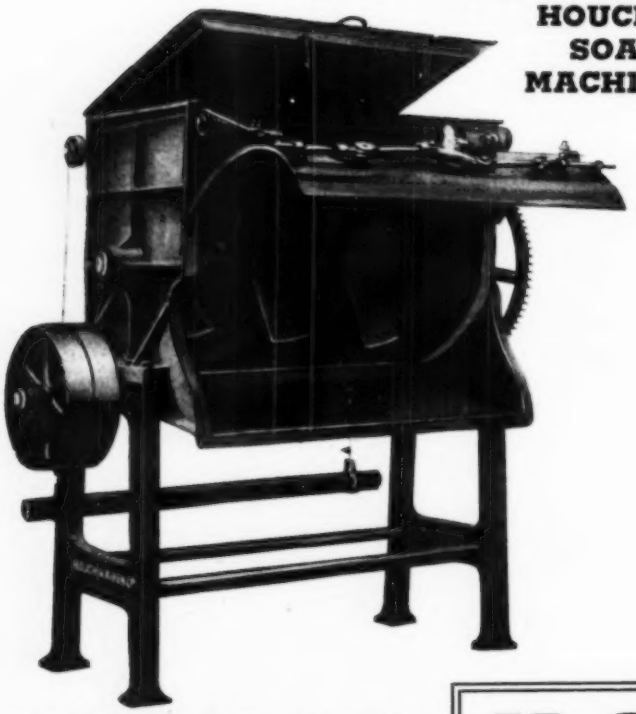

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PRODUCTION SECTION

Continuous Process Soap Making

Part II

Novel means of continuous control are offered by a recent French process for soap-making.

IN THE production section of this magazine last month, a new French method for the continuous processing of soap was presented. The process was first described in the French journal *Corps Gras* and later by M. J. Seemuler in the July isue of *"Soap, Perfumery and Cosmetics."* In last month's article, a general description of the process was given with a flow diagram of the process and a diagram of a volumetric measuring pump that is used. The use of a colloid mill to accelerate saponification was discussed as well as a method for removal of salt by interchange with caustic soda.

In the following paragraphs, Mr. Seemuler goes on to describe how various control methods were set up for the process:

Control Methods

(a) *Control of Unsaponified Materials*:—"A method has been perfected for controlling unsaponified fat by examining soap solutions in warm distilled water, the concentration of which is such that the solution is isotropic, but as concentrated as possible; in practice, 15 per cent soap solutions are used. If a soap is taken containing no unsaponified or unsaponifiable matter, its solution is perfectly clear. One might say optically void, were it not a colloid. On the other hand, if a soap containing no unsaponifiable, but containing unsaponified matter is brought into solution under the same conditions as before, there will appear a very well-marked turbidity for concentrations of unsaponified matter down to 0.06 per cent, and this turbidity increases proportionately to the amount of unsaponified matter. The presence of unsaponifiable substance in the soap likewise creates turbidity, after the manner of that brought about by the unsaponified matter. It is nevertheless quite easy to see the difference between a soap containing, for instance, 1 per cent unsaponifiable matter and 0 per cent unsaponified, and a soap containing 1 per cent unsaponifiable and 0.1 per cent unsaponified matter. The eye has some difficulty in perceiving the difference, but there exist more sensitive and accurate instruments which are not deceived.

"In practice we have carried out the estimation of the unsaponified matter as follows: "A small amount of soap is dissolved in warm distilled water, and the solution thus prepared is examined continuously by causing it to pass through a receptacle of suitable shape, three sides of which are formed of flat plates of Pyrex glass, so as to be watertight and allow the passage of light. An optical system with a source of light forms a narrow beam of light which illuminates the liquid along one

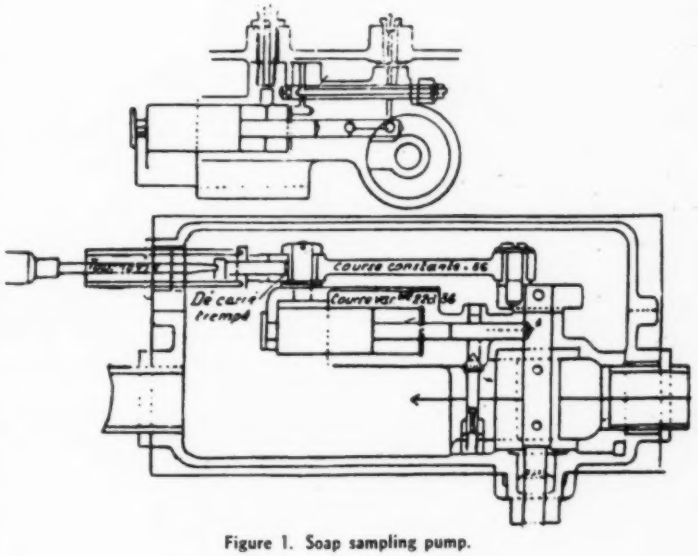

Figure 1. Soap sampling pump.

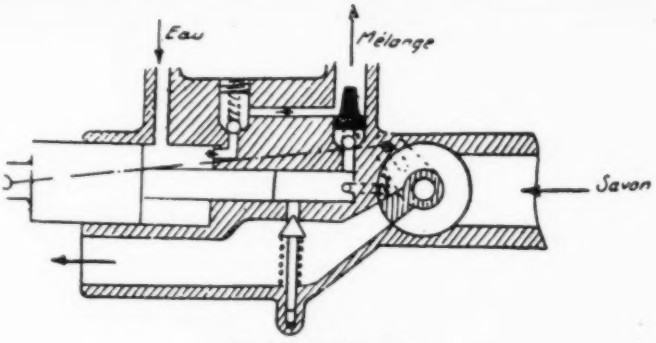

Figure 2. Stirring device.

of the axes of the container. A photoelectric cell placed at right angles to this axis receives illumination through the diffusion of light on the impurities. The extent of this illumination is a function of the amount of impurity in the liquid examined.

"The liquid to be examined is circulated through the container by pipes at each end, and the whole is heated with steam to about 100°C. The current produced by the photoelectric cell is amplified and may either operate a bell in the event of abnormal working, or else actuate any device for governing a pump or for driving any suitable electrical apparatus.

"For the sake of safety, an automatic control system has been provided on the apparatus, making it possible to detect any breakdowns which might stop the control, such as the failure of a lamp for lighting up the liquid, or the breakage of the filament in an amplifying valve, or else the failure of an iron-hydrogen rectifier (barretter), etc. With the aid of the volumetric pump shown in figure 1, samples of soap are taken and dissolved continuously. The principle of this pump is as follows:

"A very small quantity of soap (a few cubic centimeters) is forced into a cylindrical by-pass; then this by-pass is closed and a piston with adjustable stroke forces the desired amount of soap and the appropriate amount of water to the control apparatus, after passing through a small stirrer (see figure 2).

(b) *Estimation of Free Alkali*:—"The amount of alcohol necessary in a soap solution to prevent measurable hydrolysis was investigated. With 50 per cent alcohol and above, the desired result is obtained, and the procedure is as follows:

"The same pump is used as was used for the previous regulation, and to the solution of soap thus prepared there is added (with a small pump) alcohol containing phenolphthalein in the proportion:

	Parts
15% soap solution.....	40
95% alcohol with 0.5% phenolphthalein	60

"The solution is likewise examined by means of a photo-electric cell sensitive to red, which operates a signal when the soap is alkaline, i.e. the solution is red. These two controls are very accurate and highly reliable, but may appear *a priori* to be complex and costly. Nevertheless, in a continuous process, it is most important to have a continuous control. . . ."

Glycerine Recovery

IN the French process the lye is obtained with about 20 per cent glycerine, although higher percentages are claimed if part of the lye, after purifying, is used for the washing of stage two. A soap can be obtained free from its impurities, hydroxyacid soaps, mucilage, etc., but retaining its glycerine by washing it with the same salt solution after refining.

In part III of this presentation of the French process, a system for continuous fitting will be discussed. Comments on various phases of the process will be offered by experts in the United States and Europe.

Soap in Mineral Oil

The conventional method of preparing stable dispersions of sodium soaps in mineral oil is to heat the soap with a limited amount of oil to about 160°C. and add the rest of the oil slowly with agitation while the temperature is reduced gradually to 120°. Large changes in density are shown at 100°, 120°, and 190°C. with the fatty acids of higher molecular weight. F. W. Southam and I. E. Puddington, Can. J. Research *25B*, 121-4 (1947).

German Detergent Agents

In a report (BIOS Miscellaneous Report No. 11) on "Synthetic Detergents and Washing Agents," the whole of German industry in regard to these products has been resurveyed. Materials found most worth investigation in the United States are "Leonil O" and "Leonil FFO" for wool washing, and "Alipal D" for cotton washing. Leonil O was made at the I. G. works at Ludwigshafen by condensing a fatty acid from natural oils or fats with about 15-20 mols of ethylene oxide. Its chief drawbacks were considered to be poor lathering ability and the fact that it tended to be easily salted out of solution.

Leonil FFO (fat-free Leonil O) was made when the shortage of natural fats became acute. Beta-naphthol was condensed with an olefin of 6-8 carbon atoms, and this in turn was condensed with 7-8 mols of ethylene oxide. The most recent improvement was a final sulfonation whereby greater solubility and increased lathering power were obtained. Alipal D is one of the sulfonated "Igepals." *Chem. Trade J. & Chem. Engineer 120*, 535 (1947).

Soap Ion Activity

A preliminary study shows that it is possible to determine the activity of the ions of the fatty acids in soap solutions by the use of the electrode silver/silver salt of the fatty acid. The results obtained agree in general with those of several other methods for the study of the structure of soap solutions. P. Ekwall and O. Harva. *Finska Kemistsamfundets Festskrift 1944*, 257-67; through *Chem. Abs.*

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British Synthetic Soap Cake

MANY of the British soapless soaps which have appeared commercially within the last year are simply powdered or granular mixtures of alkalies with a certain percentage of synthetic detergent. It is probable that unless their prices are reduced, they will vanish from the market as soon as genuine soap becomes plentiful.

Some manufacturers, instead of racking their brains to find unusual names for unremarkable compounds, have used their ingenuity to explore the potentialities of synthetics as serious competitors of soap. An obvious line of development was to produce a compound which not only possessed the detergent properties of soap but which looked like soap.

Such a product, called "Novosope," has recently appeared, made in 4-ounce cakes by British Solvates Ltd. The detergent bar is claimed to be suitable for general household use in the same way that soap is, to lather well in both cold and hot water, and to retain its cohesion down to the last sliver. Certain precautions in use should be taken, however. The cake should not be kept in water between uses and should be allowed to dry thoroughly after use.

These stipulations indicate that the problem of finding a satisfactory binding agent is not completely solved. Anyone who has attempted to make a solid synthetic detergent knows that success hinges on developing a binder for the ingredients, which usually include china clay and abrasive besides synthetic detergent. Alginates and methyl cellulose have been tried with varying degrees of success.

The chief chemist of British Solvates, Mr. E. Shamash, who was responsible for developing the product, states that the great problem was to find a base which would not inhibit the lathering and cleansing action of the active detergent, and which would have physical properties similar to those of soap. A number of bases studied inhibited lathering while a number of others disintegrated too easily. What was finally used was a new type of synthetic plastic which has the property of dissolving slowly in water when combined with suitable long-chain sulfonates.

Much research on synthetic detergents continues and improved solid compounds are certain to arrive. *Manufacturing Chemist 18*, 387-8 (1947).

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Effect of Soap on Skin

Neither hydrolysis of soap in solution nor the presence of a small amount of free alkalinity in the soap appears to be responsible for skin irritation. Soaps which form true solutions in water are more likely to be irritating, as they pass into the deeper skin layers where they may cause changes. This effect is enhanced by the presence of salts. Soaps of higher molecular fatty acids are more colloidal in aqueous solution. The large colloid particles cannot pass through the membrane of the skin cell.

Thus soap built up from tallow, lard, and the common vegetable oils, gives protection to the skin, even in the presence of the more soluble fatty-acid soaps from coconut or palm kernel oil. Only when a high percentage of coconut oil is used in the fat charge is a harsh effect on the skin to be expected. On the same basis a liquid potash soap is more likely to be irritating than a cake soda soap. S. Alperin, *Am. Perfumer 49*, No. 7, 53-4 (1947).

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Detergent Power Studies

Factors which enter into detergent power are covered as well as the numerous methods which have been proposed in the United States, Britain, and France, for measuring detergency. It is pointed out that there are many different types of fabrics which have to be cleaned and that the detergent most suited to do a particular task has to be selected according to the material to be cleaned, also whether the cleaning is by laundering or one of the many phases of cleaning which enter into textile processing. The enormous profusion of synthetic products under a diversity of names, has created a problem as to how to make a choice of agent for a particular application.

Because of this, modern detergents have been discredited to some extent. More than four thousand brands are offered, often without description as to correct use. An attempt is being made by a group of French chemists to classify products by general chemical types so as to have a system of nomenclature which will indicate to some degree the physical properties and chemical constitution of a material. J. P. Sisley and P. J. Wood, *Am. Dyestuff Reporter 36*, 457-65 (1947).

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Hydrolysis of Soaps

In order to study the hydrolysis of soaps in solution, lauric and myristic acids in both water and alcohol were titrated with standard sodium hydroxide solution. The point of inflection on the curves came after the equivalence point, giving the values of hydrolysis alkalinity for the two soaps. In alcohol, concentrations at the equivalence point were about N/60. In every case the equivalence point, the point of inflection, and the color change coincided near an apparent pH of 10.5. J. W. McBain and A. Van Tuyl, *J. Am. Oil Chemists' Soc. 24*, 271-3 (1947).

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Molecular Rearrangement

Rearrangement of fatty-acid radicals in a triglyceride mixture is effected by heat-treatment of the mixture in the presence of not more than 10 per cent of water as catalyst, under a pressure as great as the vapor pressure of the mixture at the temperature of treatment. Procter & Gamble Co. and W. P. Williams, British Patent No. 575,315.

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Acetyl Number

A modification of the method of Roberts and Schuette for determining the acetyl number of fats and oils makes the technique even simpler and allows greater latitude in reagent specifications. K. Helrich and W. Rieman III, *Anal. Chem. 19*, 691 (1947).

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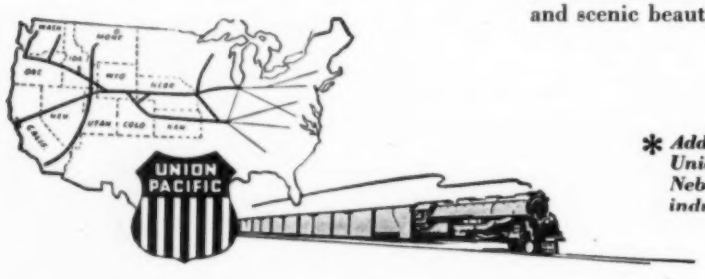

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THE STRATEGIC MIDDLE ROUTE

PRODUCTION *Clinic*

By E. G. THOMSSEN, Ph.D.

A NUMBER of years ago, when I was a member of a committee for research of an allied industry, we held a poll among chemists to ascertain what research problems to undertake. The result of this vote surprised us very much. The majority, by a large margin, stated they were most interested in methods to control clarification of their products and methods of preventing troublesome sedimentation. We had expected that, as the result of our inquiry, some more specific problem would be the outcome. Clarification and sediment prevention deals with a legion of products. Practically everybody who has to do with liquid preparations at some time or other runs into this very troublesome condition. It was too difficult and general a problem for us to recommend for research purposes so we had to avoid it. In recent correspondence, the problem of unsightly substances in liquids continues to be prominent. It is very probable that it will be with us for a long time.

In dealing with the clarification of liquids, it is necessary to consider every phase of preparation and distribution. By this we mean composition, purity and solubility of the raw materials used, storage tanks, filters, filling machines or other apparatus used in making the product, the atmosphere in which it is aged, the glass bottle or metal can used to package it, the cap and liner used as a closure, the shelf life, and the climatic conditions encountered on dealers' and consumers' shelves.

In many cases the composition of the product is the main cause of clarity breakdown. Among the more common faults are incompatibilities. In this respect many manufacturers try to make up shot-gun preparations by incorporating too many ingredients.

Others make the product too concentrated and in some cases the product is made too acid or too alkaline. Another reason often encountered is that proper precautions have not been taken to check bacterial or fungal action by the use of the proper preservatives. Quite often oxidation of products is considered as action of micro-organisms. If the difficulty is caused by oxidation it is possible to add anti-oxidants to retard this condition.

Another important factor is that raw materials do not run uniform from batch to batch. Even if purchased as *chemically pure*, they still contain impurities. It does not take much impurity to cause a floater or residue in a liquid especially if these impurities are colloidal in nature. They look like a lot to the eye but it is practically impossible to collect a sample large enough for testing purposes. As is generally known, many impurities can be introduced by the use of tap water. It is a safe policy to be eternally watchful as regards raw materials as even the simplest of these can cause difficulties. While it is elementary, the solubility of the ingredients should also be carefully considered.

The tanks, filters, filling machines and other production equipment can themselves cause trouble because of the corrosive action of the metals from which they are made. It is of utmost importance that this detail be investigated thoroughly.

The aging and filtering of liquids are quite simple operations, yet they are frequently carried out carelessly. The time of aging is very important. Some products age quicker than others and some require no maturing whatsoever. If it is desired to accelerate the aging process, air, oxygen or even ozone may be bubbled slowly through liquids. Such procedures frequently are more effective than letting a product stand a long time to age. Another detail often overlooked in aging is the fact that the surrounding atmosphere may contain minute quantities of gases or dust that may be absorbed slowly by the large surface of a liquid aged in open top tanks. Closed tanks or suitable storage locations are advisable in such cases.

Filtering operations are well understood, and they are one of the most important phases of clarification. The type of filter, the use of a filter medium, temperature of the liquid, the filter cloth construction, evaporation losses, precautions against tearing of cloth or paper, pressure and rapidity of filter flow are all points to be watched for in the clearing-up of liquid products by filtration methods.

Even though a liquid has been carefully handled up to this point, it may develop trouble in subsequent packaging operations. During the filling of volatile preparations it is important to guard carefully against evaporation losses. Once the product is in the bottle or can, further difficulties may be met with during its shelf life. There may be some slight reaction on the metal or glass. More often the liners of the closure deteriorate and throw down an unsightly mass into the contents. Lacquer on cans may dissolve in the product. The product may be

exposed to light and fade or darken under this condition. Extreme temperature changes through which the product may pass several times before it reaches the consumer may be the seat of sediment difficulties. Very often consumers fail to close the container properly and complain if it becomes unsightly, or the cap corrodes.

Every liquid preparation has its own peculiar problems. Only by considering these problems from every angle can one be reasonably sure of the keeping properties of his product. In spite of extraordinary precautions, sedimentation, colloidal mucilage type matter and floaters will turn up from time to time and can usually be traced to some change in raw materials, process or packaging that has gone unnoticed.

A New Glycol

THE Celanese Corporation, New York 16, N. Y., has recently announced the availability of 2-methyl-1, 3 pentanediol in experimental quantities. This dihydric alcohol has qualities which may be of interest for use in soaps and detergents. It has strong penetrating and softening properties. It has a slight odor, is water white, boils at 215°C, has a specific gravity of approximately 0.97 and is soluble in water. Additional information is available upon writing the company.

From Our Advertising

ARMOUR & COMPANY Chemical Division, Chicago, make available without charge their viscosity comparison chart. This should be helpful to those engaged in the fats and oils industries. All the major viscosity scales are shown on this chart and by its use a quick and easy comparison of a reading on one scale may be made with the corresponding reading of any or all of the other 17 scales. Armour and Company have pioneered their well-known "Neo-Fats," information regarding the uses of which is also available upon request.

Garnet Chemical Company, Allentown, Pa., features a novel applicator for liquid waxes and floor dressings. This reservoir applicator may be had under private label. It holds 2¼ quarts, has a 4½ foot handle, has replaceable pads, accurately controls the flow of liquids and is sturdily constructed.

Two applicators for floor maintenance also are advertised by American Standard Manufacturing Company, Chicago. A simple, practical, durable and low-priced applicator is known as the 4 in 1. Four working surfaces of top quality sleeve-like, woolen pads are slipped over a one-piece hardwood block and need no fastenings of any kind to hold them in place. The long, strong handles are threaded. The Holz-Em Applicator is strongly built, and is being used in many large institutions for applying waxes, seals and varnishes.

For small labeling jobs the Potdevin Label Pasters are called to the attention of those interested in lower cost labeling. Unskilled operators consume less time and hence less cost per unit by using these semi-automatic label pasters. They are made by Potdevin Machine Company, Brooklyn.

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New "Ucon" Glycol Catalog

A new catalog on polyalkalene glycols and derivatives titled: "Ucon Fluids and Lubricants" was recently released by the special products division of Carbide and Carbon Chemicals Corp., New York. The "Ucon" brand lubricants are used as plasticizers and softeners in the textiles and paper industry and because of their resistance to oxidation and non-gumming properties are useful lubricants in leather treating and in the formulation of hair dressings and certain cosmetics. They do not form resins and gums or become rancid under ordinary conditions and the LB series is soluble in alcohol and water mixtures. The 50-LB series, provides products having a wide range of viscosities for cosmetic use.

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ASTM Adhesive Bulletin

The American Society for Testing Materials, Philadelphia, recently issued its first compilation of physical tests and definitions relating to adhesives. The pamphlet of 48 pages includes twelve standards. Two of these include definitions of terms relating to adhesives and the others are various standardized tests, prepared either by Committee D-14 on adhesives or D-11 on rubber and rubber-like materials, which has developed three methods for testing rubber adhesives. The cost of the booklet is $1.25.

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New Carbon Tet. Data Book

A booklet recently issued by Stauffer Chemical Co., New York titled "Carbon Tetrachloride Properties and Uses," contains both technical and general data concerning the compound and serves as a ready reference book for users. The publication discusses specifications of carbon tetrachloride, physical properties, azeotropic mixtures, vapor pressure-temperature relationship of carbon tetrachloride and other chlorinated hydrocarbons, solubility of water in carbon tetrachloride, stability, action on metals and other properties.

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Gump Issues Sifter Folder

A new catalog describing and illustrating the "Bar-Nun" line of rotary sifters was recently released by B. F. Gump Co., Chicago. In addition to the usual specifications for the various sifters, description of operation and list of uses, the catalog has a useful two-page table of comparisons for wire, silk, and grit gauze sifting cloths. Copies of the folder are available from the company.

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New Zeolite Softener

A new zeolite water softener has been announced by the Liquid Conditioning Corp., of Linden, N. J. The machine employs the sodium-zeolite method of water softening and uses a special system for distribution of the incoming water over the top of the zeolite bed. A similar system controls the flow of outgoing dirty backwash water and of incoming brine which regenerates the zeolite. An underdrain system below the zeolite bed assures efficient and unimpeded flow of the softened water.

A new type of synthetic-resin zeolite called "Liquonex CR" is used. Its greater capacity reduces the size of the unit required for water treatment. The new zeolite is also nonsiliceous, so that it does not impart harmful silica to the treated water. Salt storage and brine solution compart-

SYNTHETIC DETERGENTS

R N-WATER SOFTENER A

PROPERTIES

Clear, colorless, odorless aqueous solution (density—1.21).

COMPOSITION

An aromatic polyaminocarboxylic acid salt.

USES

When used in combination with fatty acid soaps and certain synthetic detergents this organic type lime soap dispersant and solubilizer enhances foaming and detergency properties, inhibits flocculation in hard water and improves rinsing. Many types of liquid shampoos and various concentrated soap solutions are clarified on addition of this product.

RICHES-NELSON, INC.

Chemicals and Allied Products

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ments are combined in a single container, together with measuring controls. *Textile World* 97, No. 8, 144 (1947).

Nopco Issues Booklet

A new edition of its booklet "Interpretation of Analysis for the Layman" has just been released by Nopco Chemical Company, Harrison, N. J. This 40-page booklet contains information helpful to those working with industrial chemicals. Included is a cross-referenced glossary of the terms most frequently used in analyzing surface active chemicals. Another chapter describes the common methods of analyzing such agents and how the analytical figures are used to deduce the composition of various materials. Copies of the boklet may be obtained by writing to the industrial advertising division, Nopco Chemical Company, Harrison, N. J.

Bids & Contracts Booklet

To help more businessmen get their share of sales in the $5,000,000,000 annual government market, the *New York Journal of Commerce* has just issued a new 32-page booklet designed to take the mystery out of bidding and contract procedures. The boooklet is titled, "How to Sell to the Government." Copies may be obtained from the *Journal of Commerce*, 63 Park Row, New York, at 50 cents each.

Markets New Organics

Tennessee Eastman Corp., Kingsport, Tenn., is now making available in commercial quantities a number of hydroquinone derivatives of interest to the industry. Hydroquinone is a well-known anti-oxidant and stabilizing agent for preventing deterioration of fats, oils, and resins. Its disadvantages of low oil solubility and high water solubility are not found, however, in two new derivatives produced by Tennessee Eastman —hydroquinone mono methyl ether and 2,5 ditertiary butyl hydroquinone. The two new derivatives also show less tendency to discolor. Hydroquinone dimethyl ether, another derivative produced by the company is very stable and unaffected by boiling acids or alkalis. It has a pleasing fragrance of sweet clover and is finding acceptance in the perfume industry, particularly in the formulation of soap perfumes. It also is useful in formulating suntan lotions and creams.

Glyco Non-Ionic Agents

Commercial production of a line of polyoxyethylene (long chain ether alcohol) fatty esters was announced October 16th by Glyco Products Co., Brooklyn, N. Y. The new products range from liquids of low freezing point to waxy solids and from water solubility to hydrocarbon solubility. These esters are being applied in the manufacture of emulsions, dry cleaning soaps, cosmetics, and related products. Members of this non-ionic series of compounds are wetting, penetrating and detergent agents and are compatible with both cationic and anionic surface-active agents. Increased detergency is claimed for their use with quaternary ammonium disinfectants, and results of their use in emulsifying hydrocarbons and insecticides in the presence of acids and electrolytes are reported as favorable.

Develops New Organics

Iso- and tere-phthalic acids and capryl aldehyde are among the new organic chemicals recently developed by the Genesee Research Corporation, Rochester. The addition of these makes a total of more than 40 rare organic chemicals which this company now has available in research and pilot plant quantities.

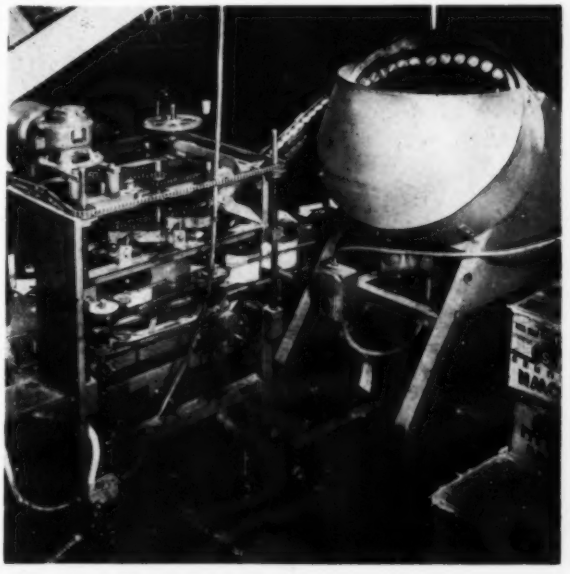
Issues Dispenser Folder

A folder has just been issued by Sugar Beet Products Co., Saginaw, Mich., describing their new line of "Type-R" chrome plate steel soap dispensers. The folder discusses the uses and advantages of the type R dispensers and offers a diagram showing the construction of the product as well as an assembly photograph showing the way the parts fit together.

Offers Flexible Tubing

Titeflex, Inc., Newark, N. J., has announced a new flexible tubing made with "Inconel" innercore and braid. The hose may be supplied for temperatures up to 1700°. The innercore of Titeflex Inconel tubing is supplied with wall thicknesses of 0.005 to 0.015 inches. The thicker wall tubing is recommended for the larger sizes where high pressure is the primary requisite, and the thinner wall where the pressure is not over a few hundred pounds per square inch and the weight is critical. Construction of the Titeflex tubing is such as to resist failure caused by excessive vibration.

The hose may be supplied with flat ribbon or round wire braid. The



This Pomona automatic screw capper can handle one bottle or a continuous line. Position of cap, screwing and tightening are entirely automatic. Bottles enter on a straight line conveyor and caps from a hopper at the top are mechanically positioned into the cap-feeding line. Flexibility of operation makes the Pomona capper suitable for both large and small plants.

Bouquet Quatre Fleur

A Triumph in Soap Perfumery

Manufacturers of fine toilet soaps – aware of changing taste and constant demand of a more discriminating public for the best in toilet soaps – will more than welcome the newly created P. R. DREYER scent, BOUQUET QUATRE FLEUR.

With consumate skill, the aromas of four favorite flowers – Rose, Jasmine, Lilac and Lilly of the Valley – are subtly blended into one fragrant perfume – BOUQUET QUATRE FLEUR – the ultimate in floral essence for toilet soaps, liquid soaps and shampoos.

P.R. DREYER INC.

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LOS ANGELES, ALBERT ALBEK, INC. • PHILADELPHIA, R. PELTZ COMPANY • THOMPSON-HAYWARD CHEMICAL COMPANY, KANSAS CITY
AND CITIES THROUGHOUT MIDDLEWEST • MEXICO, EMILIO PAGUAGA • PRINCIPAL CITIES IN SOUTH AMERICA

flat braid is recommended for higher pressures and resistance to fatigue, especially to sizes of 1 inch or more.

Titeflex Inconel flexible tubing is recommended for extreme service conditions where Monel metal or brass would be affected. Recommended applications include flexible exhaust tubing for automotive power plants, fuel and oil lines for airplanes (Zone I), for food handling, and for chemical equipment where the corrosion resisting properties of Inconel are required.

Arquads Described

A group of alkyl trimethyl ammonium chloride compounds identified by the trade name "Arquads" is described in a new folder published by Armour and Co., Chicago. The new quaternary ammonium compounds are industrial germicides, fungicides, and disinfectants. Other recommended uses are alkaline cleaning compounds, water-treating chemicals, anti-static polishes for plastics, cationic emulsifiers and textile softeners. The folder contains a table of average composition of the Arquads and offers information on compatibilities as well as directions for use in the above-mentioned fields.

Toxic Gas Analyzer

Davis Emergency Equipment Co., Newark, N. J., manufacturers of gas detection instruments, has introduced a new micro gas analyzer for determining and analyzing concentrations of gases or vapors in their toxic range. The analyzer works on the principle of electrical conductivity of solutions. Any gas, therefore, which will ionize in water, with or without heat may be analyzed in the toxic range. Included are all chlorinated hydrocarbons, carbon disulfide, hydrogen sulfide and sulfur dioxide. The analyzer reads in parts per million, is portable, weighs about 33 pounds and operates from 110 AC, 60 cycle current.

Wrapping Machinery Right

Sole foreign distribution rights of Scandia cellophane wrapping cachinery outside of the Americas have been acquired by American Machine and Foundry Co., New York, makers of high-speed automatic machinery for the tobacco, textile and cosmetic trade, it was announced in October by the company.

No-Roma Booklet

Directions for the use of the quaternary ammonium disinfectant "No-Roma" in public eating establishments, homes, laundries, dairies and institutions are offered in a new booklet issued by Baird & McGuire, Inc., Holbrook, Mass. "No-Roma" an alkyl dimethyl benzyl ammonium chloride type of quaternary is said to be highly stable, practically odorless, colorless, non-inflammable, non-corrosive, non-irritating and non-volatile when diluted according to directions. A useful dilution chart for making up solutions of the disinfectant for various uses is offered.

Wyandotte Making Carbose

Wyandotte Chemicals Corp., Wyandotte, Mich., is now manufacturing commercial quantities of "Carbose", a technical grade of carboxy methyl cellulose. The product, in wide use as an adhesive and thickening and suspending agent, is currently being promoted by Wyandotte as an extender for synthetic detergents. According to the company's findings, when Carbose is used with certain synthetic detergents, their laundering performance equals and in many cases excels that of the best grades of soap.

Booklet On Conveying

An eight page booklet on the "Convair" line of pneumatic conveying systems was recently issued by Convair Corp., Pittsburgh. The booklet shows diagrams of a number of conveying systems using the Convair pneumatic system and points out the advantages in each case.

Offers New Emulsifiers

Nopco Chemical Company, Harrison, N. J., is now in production on its "Nopalcol" products, a new series of non-ionic emulsifying agents. These surface active agents are long chain ethylene oxide polymers of fatty acids. Already introduced to a number of industries these emulsifiers have exhibited ready adaptability for solving specific problems in the manufacture of cosmetics.

Being non-ionic, the Nopalcol materials are not affected by hard water, salts, or dilute acids which usually cause instability when soaps, sulfated oils, or sulfated fatty alcohols are used. The outstanding feature of these compounds is the flexibility of their chemical and physical properties due to alteration of the length of either the fatty portion or the ethylene oxide polymer.

New Octa-Klor Bulletins

Two new technical bulletins describing the "Octa-Klor" brand of chlordane insect toxicant are now available from Julius Hyman & Co., Denver, manufacturers of the product. Technical supplement No. 2 concerns the preparation of chlordane emulsifiable concentrate and Technical supplement No. 205 gives information on chlordane for direct control of truck crop and garden insects.

Burden Joins Fleuroma

Fleuroma, Inc., New York has announced the appointment of W. C. Burden as Canadian Sales Agent with offices at 760 St. Antoine Street, Montreal. Mr. Burden is handling the full line of Fleuroma perfume specialties and bases, aromatic chemicals and essential oils.

New Package Consultants

A new firm of packaging consultants started October 15th in New York under the name of Shaw & Hamm. Dr. Wm. I. Shaw, formerly with Silver Hill Products Co., Brooklyn, and C. H. Hamm, formerly of United Drug Co., Boston, are specialists in packaging, filling and materials-handling problems. They expect to cover a wide range of activity including sanitary food control, plant sanitation engineering, formulation, new product development, correction of processing difficulties, advertising and labeling problems as well as representation and testimony before official bodies under the Federal Food, Drug and Cosmetic Act. They are located at 19 Hudson St.

PRODUCTS AND PROCESSES

Uses of Potash Soap

Potash soap made with 30 per cent of coconut fatty acids and the balance from domestic vegetable oils, gives a bland soap high in detergent and foaming power and superior to the old straight coconut-oil soap in its nonirritating effect on the skin. Besides the use of such soap in liquid shampoos, it is effective in products for washing woolens, rugs, rayons, and other delicate materials, where it may be desirable to keep the temperature relatively low. The ready and high solubility of potash soap leads to its use for cleaning automobiles, railroad cars, floors, and woodwork. More and more hospitals today are purchasing a concentrated liquid potash soap because it saves labor in use. D. J. Bachrach, *Am. Perfumer & Essential Oil Review 50*, No. 3, 265-9 (1947).

Piperazine Detergents

Detergent compositions soluble in acid or alkali are prepared by saponifying excess *N.N'* -dialkanol piperazines with carboxylic acids, preferably of 8-18 carbon atoms, or their esters, to form mono ethers or monoesters of the dialkanol piperazines. J. D. Malkemus, U. S. Patent No. 2,421,707.

Organic Sulfonates

Refined organic sulfonates are prepared by a continuous process which simultaneously hydrolyzes, neutralizes, and purifies organic sulfonyl halides. The preparation is by flashing a hot mixture of an organic sulfonyl halide, unsulfonated matter, an alkaline hydrolyzing agent, and solvent for it, into a zone at a temperature above the boiling point of the solvent. The purification gives improved detergency to the product. J. H. Percy, to Colgate-Palmolive-Peet Co. U. S. Patent No. 2,422,128.

Secondary Alcohol Sulfates

Straight-chain fatty acids preferably of 6-11 carbon atoms are converted into ketones, hydrogenated into secondary alcohols, sulfated, and neutralized to form the sulfate salts. Secondary alcohol sulfates with 13 carbon atoms are claimed to possess superior wetting and detergent properties. E. E. Dreger and J. Ross, to Colgate-Palmolive-Peet Co. U. S. Pat. No. 2,422,613.

High Molecular Alcohol

A high molecular-weight polyhydric alcohol is produced from natural oils such as soybean and tung oil by polymerizing at an elevated temperature the methyl esters of the fatty acids. The polymer is then hydrogenated to the corresponding alcohol in the presence of a catalyst such as copper chromite. W. B. Johnston, to the Am. Cyanamid Co. Canadian Patent No. 444,143.

Cleaner for Aluminum

A cleaning solution that does not attack aluminum contains soda ash 10 grams per liter, sodium silicate 2 grams per liter, or soda ash 5 grams per liter, trisodium phosphate 5 grams per liter, and sodium silicate 2 grams per liter. Aluminum apparatus used for pasteurization, refrigeration, etc. in the dairy industry, in which a salt deposit of milkstone is formed, is preferably cleaned with a warm solution of 10 per cent nitric acid. P. Prevot, *Rev. aluminum 24*, 121-8 (1947).

Purifying Tall-oil Soaps

In the purification of soaps prepared by saponification of tall oil, 3 to 4 salting-out operations must be made; the first at 60-80 C. with 7 per cent brine in order to give a spent lye with 4.5-5 per cent sodium chloride. The loss is 3-4 per cent, but it consists mainly of oxidized resin and fatty acids and the resinous and tarry matter responsible for the dark color of the soap. Higher temperatures are unsatisfactory because separation of the spent lye is more difficult and the salting-out losses are greater without practical advantage. In successive saltings, the temperature may fall to 40-50°, but the salt concentration must be the same as or higher than in the first treatment to minimize loss. The third and fourth salting operations eliminate organic coloring matter and other substances lowering the quality of the soap. The amount of resin and fatty acids lost at this point is small. The total loss of tall-oil soap is 6-7 per cent. O. Harva, *Suomen Kemistilenti 19B*, 77-83; through *Chem. Abs.*

Soap from Dairy Waste

Fat-containing waste products from the dairy industry are salvaged and made into soap. The process involves boiling with 140-150 grams of caustic soda per kilogram of fat for 2.5-3.5 hours, and treatment with salt solution or dry salt. In waste products where the percentage of fat is low, they are treated with 4-8 per cent of absorbing clay or bone char to recover the maximum amount of fat. K. Promtov. *Myasnaya i Molochnaya Prom.* U.S.S.R. *1946*, No. 4, 59-60; through *Chem. Abs.*

Fractionation of Tall Oil

The rosin acids of tall oil are separated as follows: (1) selective esterification of the free fatty acids with an open-chain alcohol containing 1-5 carbon atoms; (2) selectively dissolving the major portion of the esters of the fatty acids and sterols in a paraffinic-type hydrocarbon solvent such as naphtha, and the rosin acids in furfural or other polar solvent immiscible in naphtha; (3) fractionally distilling the solvent mixtures; (4) further distillation to obtain the purified esters or acids. S. E. Freeman and S. W. Gloyer, to Pittsburgh Plate Glass Co. U. S. Patent No. 2,423,232.

Mild Detergent

A mild detergent composition effective in sea water is formed from sulfated fatty materials together with alkali soaps, the alkyl radicals of which contain at least 16 carbon atoms. A typical composition consists of 54 per cent of highly sulfated oleic acid, 6 of caustic soda, 4 of sodium resinate, and 36 of sodium soap. J. Cunder, to National Oil Products Co. U. S. Patent No. 2,414,452.

NEW PATENTS

Conducted by
Lancaster, Allwine & Rommel

PATENTS, TRADEMARKS AND COPYRIGHTS

402 Bowen Building,
Washington, D. C.

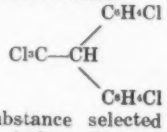
Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel.

No. 2,426,864, Fungicides, patented September 2, 1947 by Lloyd Crosser Felton, Baltimore, assignor to Lynson, Westcott & Dunning, Inc. A fungicidal composition consisting essentially of 3.5 dibromsalicylaldehyde and borax, said composition when dissolved in water having a pH value of from 7 to 8.5.

No. 2,427,286, Insecticide and Method of Using, patented September 9, 1947 by William A. Knapp, New York, and Leon J. Heuser, Glen Ridge, N. J., assignors to General Chemical Company, New York. An insecticide comprising an aqueous dispersion containing an emulsifying agent and as an active insecticidal ingredient a compound selected from the group consisting of compounds in which the group: CH=CHR is added in either the ortho or para position on the pyridine or quinoline ring. R denotes an organic radical containing from 4 to 9 carbon atoms.

No. 2,427,677, Halogenated Quinoline Insecticides, patented September 23, 1947 by William A. Knapp, New York, assignor to General Chemical Company, New York. The method of combatting sucking insects which comprises distributing upon the insect a contact insecticide comprising a halogenated quinoline.

Re-issue 22,922, alpha:alpha-di-(p-chlorophenyl)-beta:beta:beta- trichlorethane insecticidal compositions and method, patented September 30, 1947 by Paul Muller, Basel, Switzerland, assignor to the firm J. R. Geigy A. G., Basel, Switzerland. An insecticidal composition of matter comprising the combination of the active ingredient alpha:alpha-di (p-chlorophenyl) - meta:beta: beta - trichlorethane of the formula



and a substance selected from the group consisting of powder, solvent liquid having a boiling range above the initial boiling point of kerosene, and aqueous emulsion.

No. 2,428,317, Cleansing Composition, patented September 30, 1947 by Edward J. Moran, Chicago. A cleansing composition in dry powdered form comprising 10 to 20 per cent by weight water-dispersible titanium dioxide, 20 to 70 per cent ground silica, and 10 to 40 per cent soap, said titanium dioxide coating the ground silica particles to cause the particles to roll on each other and to hold the particles against an object being cleansed while stabilizing suds created by said soap when wet with water.

Cottonseed Processing

Methods are described for processing cottonseed so that the pigments will go into the oil, remain with the seed meal, or be separated from both. The presence or absence of moisture is the significant factor in such control. C. H. Boatner, C. M. Hall, R. T. O'Connor, L. E. Castillon, and M. C. Curet, *J. Am. Oil Chemists' Soc. 24*, 276-83 (1947).

Treating Dark-Colored Fat

Dark-colored fats or greases high in fatty acids, are treated with 0.25-2.0 per cent by weight each of 70-85 per cent of phosphoric acid and 30 per cent of hydrogen peroxide at 60-70° C. for 0.5-1.5 hours. They are then washed with water, dried above 100°, and bleached with 2-6 per cent of fullers' earth at 80-125°. An oil, initially too dark for a color reading and containing 16.9 per cent of free fatty acids, was bleached in this way to a Lovibond reading of 8.5 R 75 Y (1-inch column), and a tallow too dark to read containing 27.7 per cent of free fatty acids, was bleached to a Lovibond color of 18.0 R 75 Y. The bleached oil or fat is particularly suitable for soap making.

A further treatment is to saponify the bleached grease to form a soap, and to bleach the soap to yield a light-colored product. From 0.01 to 0.5 per cent of sodium dithionite or sodium sulfoxylate is used to give products lighter in color than the original stock, indicating that no color reversion occurs during saponification and later bleaching. The yellow and red colors on the Lovibond scale are both decreased in the process. Lever Brothers & Unilever Ltd. British Patents No. 577,879 and 577,880.

POTASH SOAP MEETING

(*From Page 49*)

Soap Association had not been invited by the department to send a representative. The board of directors, in a resolution directed to the U. S. D. A., asked that at any such future meeting the Potash Soap Association be permitted to be represented. They also petitioned the department to limit its future exports of inedible fats, and to so shape its fat allocation policies as to minimize disruption of domestic price levels.

A guest at the directors meeting was Martin Peters of Moore Brothers Co., New York, a director of the National Sanitary Supply Ass'n, who outlined a suggestion for a cooperative program between the PSA and the NSSA to educate buyers and users of liquid soap in its correct use. In the discussion which followed, it was pointed out that improper formulation of liquid soaps, the use of the wrong concentration of liquid soap, or incorrect handwashing practices, often lead to complaints from users such as poor lathering, hand chapping, etc. Mr. Peters emphasized that liquid soap users should be instructed to wet their hands before applying soap and to rinse them thoroughly after washing, indicating that if such correct washing practice is followed, complaints might be almost completely eliminated. This subject will be pursued by both organizations at their future meetings and an attempt will be made to work out a program of user education in correct liquid soap use.

OIL CHEMISTS MEETING

(*From Page 39*)

pressure in a laboratory unit were discussed in a paper titled "Refining Fatty Oils in Solvents" by M. Mattikow, Refining Uninc., New York. As the temperature of the system is raised, gums are precipitated. At temperatures of 140°F. to 158°F., two layers are formed, the upper being light, and the lower layer relatively dark colored. Phosphatides concentrate in the lower layer. The phase volume ratio is dependent on the initial ratio of solvent and oil and on the nature of the oil. Phosphatides remaining in oils degummed with liquid propane are of the order of 0.2 per cent when the ratio of volume of oil to propane is about five to one.

Ammonia Hydrogenation

A PAPER on the "Use of Dissociated Ammonia for Hydrogenation" by A. Van de Erve, W. A. Jacob, and R. A. Bates, Armour and Co., Chicago, pointed out that the cost of producing hydrogen gas by dissociating ammonia is economically attractive, where hydrogen gas requirements are not sufficient to warrant investment in more expensive hydrogen-producing equipment. The process of hydrogenation with dissociated ammonia involves five steps, namely (1) conversion of liquid ammonia under pressure to a gas at low pressure, (2) cracking ammonia under high temperature and low pressure using a nickel catalyst in a retort, (3) removal of residual ammonia (0.05 per cent) from the mixture of hydrogen and nitrogen, (4) compression of the mixed gases, and (5) hydrogenation of fatty materials using the mixed gases.

The efficiency, in most cases, is as high as that of the steam-iron hydrogen process, (84.5 per cent in one run and 91.1 per cent in another), during runs on lard and cottonseed oil. Nitriles are satisfactorily hardened to primary amines and fatty acids are hydrogenated to iodine values below 5 with yields comparable to steam-iron hydrogen technics. Both edible and inedible fats can be hardened successfully by the dissociated ammonia hydrogen process where constant vent and constant pressure are involved. The system is more flexible and no impurities are present to poison the catalyst.

Analyzing Tall Oils

TESTS made on seven different samples of tall oil indicate that the use of a pH meter to determine the end point of tall oil titrations is preferable to the use of a doubtful visual end point, according to a paper by Chester A. Snell, delivered by Foster Dee Snell, titled "Potentiometric Method for Determination of Acid, Saponification, and Rosin Acid Values of Tall Oil." The procedure given in ASTM specification D803-44T can be used for these dark oils and pH 11 taken as the end point for acid value and saponification value. Type E electrodes for high pH reading with the Beckman pH meter were used and two inflections were observed for rosin acid number, two end points being taken at pH 6 and pH 11.

to obtain and that the apparent pH values at the break points or inflections are important because these points are where the color changes take place when colorimetric indicators are used. Data comparing the ASTM method and the potentiometric method are offered:

Sample	Acid Number	
	ASTM	Poten.
1.	169	168
2.	170	169
3.	162	161
4.	163	160

Testing Ternary F. A. Mixes

A TRIANGULAR coordinate system for analyzing ternary mixtures of fatty acids was explained in a paper titled "Solidification Point Curves of Ternary Systems in the Saturated Fatty Acid Series" by H. A. Schuette and J. G. Kane, University of Wisconsin. Professor Schuette pointed out that the curves can be used in analysis of unknown ternary mixes of fatty acids providing the identity of the components is known. The equimolar lines on the triangular diagrams are perpendicular to the side joining the highest and lowest acids, and are parallel. Determination of the mean molecular weight and of the solidification point of an unknown ternary mixture will immediately locate its composition at the point of intersection of the equimolar line and the isotherm.

Sapon. Value		Rosin Acid Number	
ASTM	Poten.	ASTM	Poten.
186	183	57	58
188	183	56	58
175	173		
174	174		

The solidification point diagrams of four ternary systems in the homologous series of adjacent saturated fatty acids of even number carbon atom content from C_{12} to C_{22} show a striking similarity. The isotherms at lower temperatures in each diagram tend to form continuous contours. With decreasing temperatures their spread decreases until the minimum point of solidification is reached. This point represents a practically constant composition (66 to 67 mole per cent) with respect to the acid of lowest molecular weight which is present in the mixture.

Nickel in GR-S Soap

A RETARDING effect in the rate of polymerization in the reaction producing GR-S synthetic rubber was pointed out to be partially due to the presence of nickel in the tallow soap component used to emulsify the batches. This effect, discussed in a paper titled "Relationship between Nickel Content of Soap and Conversion to Polymer in GR-S Manufacture" by B. A. Brice, Margaret L. Swain, C. O. Willits and W. C. Ault, Eastern Regional Research Laboratory, USDA, was found to have a linear relationship, a nickel content, approximately 8 parts per million corresponding to a drop of 1 per cent in polymerization rate. Quantitative colorimetric analyses established a range of 0.0 to 104 parts per million of nickel in the soaps examined.

Rosin Soap in Rubber

Disproportioned rosin, sometimes termed dehydrogenated rosin, forms soap suitable for use as the emulsifier in the polymerization of GR-S. This rosin rubber is designated GR-S-10 and is more tacky than GR-S and therefore superior for tire building. In the course of developing a rosin emulsifier which could be used commercially, a large number of samples were prepared and tested by Hercules Powder Co., Wilmington, and then evaluated more completely by the rubber companies. These cooperative studies established that suitably refined disproportionated rosin gave uniformly acceptable rates of polymerization and polymers with outstanding physical properties. Preparation of a rosin satisfactory for the purpose involves (1) complete removal of abietic-type acids, preferably by the disproportionation reaction, and (2) removal of phenolic inhibitors by suitable refining.

As a result of the application of the experimental findings, a commercial plant is now in operation producing a uniform disproportionated rosin soap with polymerization activity approaching the maximum values which can be obtained with pure resin acid soaps. The new soap is called "Dresinate 731." J. T. Hays, A. E. Drake, and Y. T. Pratt, *Ind. Eng. Chem.* 39, 1129-32 (1947).

Phase Study

A phase study has outlined the regions of existence of isotropic solutions up to 160° C. for sodium palmitate-builder-water systems. The builders used were trisodium phosphate, tetrasodium pyrophosphate, sodium metasilicate, and sodium silicates of SiO_2:Na_2O ratios by weight of 2.46 and 3.93.

The results resemble qualitatively those previously obtained with a commercial soap and various commercial builders. The 3.93 silicate, as well as the metasilicate, has a greater salting out action on isotropic solutions above 90° than the 2.46 silicate. This may be due to a high ionic strength caused by polyvalent silicate micelles, or to the formation of sparingly soluble "complexes" between the silicate micelles and the soap. "Calgon," which likewise contains negatively charged micelles, salts out soap at much greater dilutions, possibly for the same reasons. R. C. Merrill and R. Getty, *J. Am. Chem. Soc.* 69, 1875-82 (1947).

Evaluation of Detergents

A simple and rapid method of comparing detergent products has been developed to supplement Launderometer, washing, and other more elaborate tests. It consists of agitating standard soiled swatches of both cotton and wool in a solution of the detergent at 140° or other desired temperature, for a fixed period of time. Pint thermos bottles are preheated with water at the test temperature, emptied, and filled with the detergent solution at the same temperature. Four bottles can be used at one time. They are placed in a mechanical shaking machine after the soiled swatches have been inserted, one of each type of fabric in each bottle. No balls are used in the bottles.

For comparison it is desirable to include in each test a standard detergent at optimum concentration. Usually the swatches show distinct differences merely by visual examination, but they can be read with the aid of a reflectometer if desired. Good reproducibility of results was obtained. A. J. Kelly and D. H. Gunther, *Am. Dyestuff Reporter* 36, P455-6 (1947).

Pilot-Plant Bleaching

Physical and chemical analyses of fabrics taken at various stages of a pilot-plant procedure suitable for the kier boiling and bleaching of 100-pound to 200-pound lots of cotton fabrics show that the fabrics meet present commercial standards. A four-hour hydrogen peroxide bleach did very little damage to the fabrics. Fabrics which remained in the bleach bath overnight were sufficiently damaged to preclude recommending such a procedure. Formulas, liquor ratios, temperatures, description of the apparatus, and other information are given. J. H. Kettering and W. N. Berard, *Am. Dyestuff Reporter* 36, 552-4 (1947).

Phase Behavior of Soap

In contrast to the many studies of the phase diagrams of soaps in aqueous systems, very little is known as to the phase behavior of soaps in nonaqueous solvents. The phase behavior of anhydrous systems of sodium stearate and the following hydrocarbons was studied in sealed tubes by visual observation: *n*-Heptane, isooctane, cyclohexane, benzene, toluene, ethyl benzene, *ortho*-xylene, *meta*-xylene, *para*-xylene, cumene, *n*-butyl benzene, and *para*-cymene. The soap was soluble to the same extent in all of the pure hydrocarbons. The phase diagrams are very similar in form for all of these hydrocarbons, but differ from that reported elsewhere for cetane.

Five general conditions were found to exist in the anhydrous systems: (1) A white, opaque gel (2-phase) that exhibits limited swelling as a direct function of temperature; the gel contains a more or less dispersed solid crystalline phase, plus sol or jelly; (2) an orange, translucent, liquid-crystalline phase; (3) a white, wax-like, semitranslucent, liquid-crystalline phase which melts to isotropic liquid at a considerably higher temperature than the pure sodium stearate; (4) an isotropic solution continuous in phase with the jelly; and (5) in special regions of the sol an isotropic jelly which has unlimited swelling passing to the solution without any observed transition or change of phase.

All phase changes were reversible and obeyed the phase rule of Willard Gibbs. G. H. Smith and J. W. McBain, *J. Phys. & Colloid Chem.* 51, 1189-1204 (1947).

Soap Stabilization

Soaps are stabilized with sulfur-substituted *beta*-mercaptopropionic acids. The compounds are prepared by the addition of mercaptans to ethylene monocyanide followed by acid hydrolysis of the resulting nitrile. The products are slightly soluble in both fats and water. They increase the color and odor stability of soap and decrease the peroxide value. M. F. Gribbins, to E. I. du Pont de Nemours & Co. U.S. Patent No. 2,416,052.

SANITARY PRODUCTS

A SECTION OF SOAP

THAT a large tonnage of food which might go a long way toward helping to feed the needy populations of Europe is destroyed every year by insects, rodents and fungi has been pointed out by a dozen authorities during the past month. That some of them are rather caustic in their comments regarding the Government's more or less makeshift current food saving plans is not unexpected. It has been pointed out that the Department of Agriculture has known the real answer for years and has constantly preached conservation through more extensive rodent and insect control,—and had this USDA advice been followed more closely during the past few years of food scarcities, greater surpluses would be available now for export. The emphasis, they hold, should have been on *greater production* including prevention of destruction of growing crops and especially preventing losses of foods in storage and in process by insects and rodents.

As far as staple food production for 1947 is concerned, the die is cast. The crops are harvested, are insufficient for our needs, and the emergency is upon us. Undoubtedly, emergency methods are now necessary to solve the problem. But such emergency methods do not consist alone of these meatless, eggless, and wheatless days,—and other such schemes. Billions of dollars worth of food are in process and in storage all over the country. Unless the insect and rodent problem in connection with this stored food is also handled as an emergency, these pests will take their usual toll running into the millions over the next few months.

The materials, the equipment and the brains to cut rodent and insect damage to stored foods to a minimum between now and next spring are quickly available. Efforts to accomplish this end should be made now,—not after the damage has been done. If there is a food emergency, then to our way of thinking, potential insect damage is of greater importance than it has ever been and efforts to prevent such damage should be expanded immediately. The USDA and industry, we are certain, stand ready to act promptly and expertly along this line. A word from the powers-that-be in Washington should, we feel, be the first step.

LAST month in Washington, the Association of Economic Poisons Control Officials held its first annual meeting. The gathering was significant inasmuch as it marked the first time that state and federal law enforcement officials,—that is the officials who enforce the laws regulating insecticides, disinfectants, fungicides, rodenticides and other economic poisons,—met together as a formally organized unit. The meeting was extremely successful and well attended. Members of industry were present and invited to sit in and take part in the open meeting discussions. Officials of the two national insecticide associations were among the speakers.

This first meeting of the Control Officials which included both state and USDA men, we feel, marks a long progressive step forward in law enforcement. From it may in time come that goal of all insecticide and disinfectant manufacturers, uniformity in law and regulation. From it, we believe, will also come better law enforcement, that is fewer difficulties for the reputable manufacturer, and a gradual elimination of the chiseler. Through the combined efforts of these officials working in a group, the marketer of illegal and off-grade products, the deliberate crook, will in time find it impossible to operate and will cease to be a competitive thorn in the side of legitimate industry.

The new association has had an auspicious start. Its opportunity to improve and simplify law enforcement and to aid industry in labeling and marketing practices is great. We feel that a long and useful future lies ahead.

ECONOMIC POISON LAWS

an outline of their development "from 1910 to 1950" . . . with a review of the role played by the N.A.I.D.M. in the household disinfectant and insecticide field

By H. W. Hamilton*
Koppers Co.

THIRTY-SEVEN years ago, Congress passed the Insecticide Act of 1910. It was a good, well - prepared, broad piece of legislation. During the intervening years, it has been found not too far short of its goal to regulate and prevent fraud in the sale of insecticides, disinfectants and allied products. The industries affected have been fortunate in having had able and understanding administrators of the Act. Right from the start in 1910 to this time, these men have demonstrated a degree of wisdom and cooperation in the administration of the Act far beyond their required "line of duty," yet never in my years in the industry have I heard one word about *lack* of strict enforcement of the law.

The Insecticide Act brought to industry the realization that it had problems of an intricate nature never before encountered. As an outgrowth of that situation, the National Association of Insecticide & Disinfectant Manufacturers came into being in 1914. From the beginning, federal and state officials were urged to come to its meetings and join in the discussions to help solve mutual problems. One of the earliest problems was the standardizing of phenol coefficient testing methods for disinfectants.

Gradually the NAIDM came to be known as the household and industrial insecticide and disinfectant group. This broadly includes some farm products such as cattle sprays, animal dips, and some dairy sanitation chemicals. Interest in sanitary products such as soap specialties, waxes and deodorants developed within the membership as these markets grew.

In the field of insecticidal agents, new and complicated substances began to appear, among them pyrethrum, pyrethrum extract sprays, derris, rotenone, organic thiocyanates, dichloro - diphenyl - trichloroethane (DDT), synergistic agents, and many others. Cationic and anionic types of disinfectants began to be discussed. Space sprays, surface sprays, aerosols, dips, washes, and treatments of various types became subjects for consideration. The Act of 1910 still carried on fairly well.

Through the years NAIDM kept its activities abreast of these new developments. It established the Peet-Grady Method for evaluating liquid household insecticides as well as standard specifications for these products. This meant the annual preparation of the Official Test Insecticide. NAIDM committees developed standard specifications for insecticide and disinfectants which were also adopted by the National Bureau of Standards of the U. S. Department of Commerce. One of NAIDM's contributions to the industry was research conducted at its own expense for the clarification and exact definition of the terms "antiseptic," "disinfectant," and related words by an eminent lexicographer.

New methods for the testing of quaternary ammonium type disinfectants have recently been worked out through the cooperation of the U. S. Department of Agriculture and NAIDM. New techniques for testing insecticide sprays having residual toxic properties are being worked on by our committees. New chemical methods for determining uniformly the constituents of insecticidal and bactericidal products are constantly being evaluated and correlated by NAIDM committees.

The annual dollar sales volume of products coming within the purview of the Federal Insecticide, Fungicide and Rodenticide Act and the state economic poisons laws is large. Many

* Address by Mr. Hamilton, secretary, Natl. Assn. of Insecticide & Disinfectant Mfrs., before the annual meeting, Assn. of Economic Poisons Control Officials, Washington, D. C., Oct. 19, 1947.

millions of dollars are spent in protecting agricultural crops of all kinds. The field of NAIDM—the household and industrial field—is smaller in dollar volume. In numbers of people affected directly by these laws through the use of products in the household and industrial group, however, NAIDM probably serves the greatest number, and companies in its field distribute the most individual packages.

The urban population of this country was 74,423,702 in 1940. This is greater than the population of all the rural or agricultural areas. Only a small percentage of the urban population will ever purchase or have use for an agricultural insecticide or fungicide. There is more than a possibility that eventually every urban dweller will require a household or industrial type of disinfectant or insecticide for use in combating roaches, ants, waterbugs, silver fish, clothes moths, carpet beetles, bedbugs, body lice, fleas, for the prevention of the spread of infection, and in promoting general cleanliness.

These millions of city people, coupled with the rural population, who also use these products, buy hundreds of millions of packages of household insecticides and disinfectants each year. Laws are made for the people,—for all the people. The National Association of Insecticide and Disinfectant Manufacturers' viewpoint is always tempered by the fact that its industry sells to the millions,—the masses. Its products are in stores filled with attractive packages of soap, toilet articles, cosmetics, and many other well-packaged commodities. NAIDM steadfastly maintains that every new law should recognize the value of the services its members' products perform, and consider merchandising problems. Attractive packages promote sales and wider use. Label requirements should consider this fact.

The NAIDM has always promoted standards for assuring high quality products. This work has been continuous for over thirty years and still is being continued. We strive to cooperate with all law enforcement officials. Our meetings are open to all officials whose duties are associated with our industry, — federal, state and municipal.

At the time of the passage of the Federal Insecticide Act of 1910, only eleven states had legislation controlling the production or marketing of insecticides. Most of these were very simple laws relating to only a few materials such as Paris Green. By 1918, twenty-one states had such legislation, and by 1925 economic poisons were controlled by legislation in thirty states. In 1946 this list had grown to the point where thirty-seven states had passed such legislation.

THERE was a widespread feeling among state officials that a uniform pattern should be evolved for future state legislation. Mr. Thatcher, Secretary of the National Association of Commissioners, Directors and Secretaries of Agriculture, accordingly proposed to the Council of State Agencies that that organization undertake to sponsor the development of a uniform state economic poisons law. Under the direction of that agency, conferences were started in which various state and federal enforcement officials participated. Representatives of industry were invited in from time to time and given an opportunity to voice their opinions on the proposed draft. As you know, the final draft of the proposed uniform law was adopted by the Drafting Committee of the Council in October, 1946.

In substance this uniform bill has been adopted during the past year in seven states. Its counterpart was passed at the last session of Congress by the Federal Government. NAIDM, as well as other industry groups, was not wholly satisfied with certain of the provisions of this uniform bill. We did feel, however, and still believe, that the bill represents the best possible compromise between various conflicting viewpoints. We feel that in this uniform bill a sound basis has been established from which to work in advocating and progressing toward uniform state and federal laws, regulations and practices.

As legislatures convene in 1948 and in 1949, it can be assumed that additional states will pass legislation affecting the industry represented by the National Association of Insecticide and Disinfectant Manufacturers. It is reasonable to suppose that by 1950 almost all of the States will have economic poison laws.

NAIDM has in the past, and will in the future, strive to promote the development of new products, means of standardizing and testing these products, and the dissemination of information on the many phases of the industry it serves. The individual companies of which the membership is composed are primarily founded for profit. The conduct of any business today is beset with a multitude of complications. Consider, therefore, the great need for uniformity in federal, state and municipal laws. We do not ask for weak or meaningless laws. We appeal to lawmakers and enforcement officials to seek only useful and needed laws and regulations, with a minimum of detailed requirements necessary to protect the public purchaser and, above all, to help the manufacturer by an honest endeavor to "cut the cloth to the pattern" now fairly well established.

The National Association of Insecticide and Disinfectant Manufacturers has felt the great need for a complete compilation of economic poisons laws and regulations in one book that could be kept up to date. Work on such a compilation was started two years ago and today the book is completed. We have sought to give industry and government a complete reference book,—not only to our membership, but to all in our industry. Copies of the compilation may be obtained at a nominal price. The compilation will be kept up-to-date by annual supplements. Enforcement officials can aid us in this by their cooperation in seeing that we receive all regulations and explanatory material.

The National Association of Insecticide and Disinfectant Manufacturers wishes to promote the development of better products, a fuller understanding of their values and uses, and insure proper supervisory control. You can receive from us the benefits of over 34 years of cooperative scientific and industrial experience. We ask your help and advice. Together we can all do our part to make a better world in which to live.

STABILITY of AEROSOL FORMULATIONS

By
Edmond G. Young
E. I. duPont de Nemours & Company
Jackson Laboratory
for
Kinetic Chemicals, Inc.

DURING the past few years much effort has been directed toward producing an aerosol formulation of increased stability. Recent papers by Goodhue and co-workers (1, 2, 3) have reported their studies on this subject and have shown that certain additives to the formulation influence the decomposition markedly. This present research may be considered supplementary in nature to the work of Goodhue and co-workers, and its value lies in a more comprehensive examination of possible inhibitors for the corrosion which takes place in aerosol-containing cylinders.

Procedure

A MODIFIED technique based on the one described by Goodhue and Ballinger (2) has been used throughout these tests. A "Pyrex" brand glass test tube of 12 mm. I. D. and 3 mm. wall about 20 cms. long was the standard container. After thorough cleaning as described in reference 2, the tube was charged as follows:

1. A metal strip, cut from a commercially available one pound aerosol container, was cleaned with organic solvents to remove any paint or other outside coating to prevent complications in the results obtained. Each strip was then marked, measured, and weighed. The approximate dimensions were 0.12 cm. by 0.64 cm. by 6.35 cm. and the approximate weight was 2.9 grams.

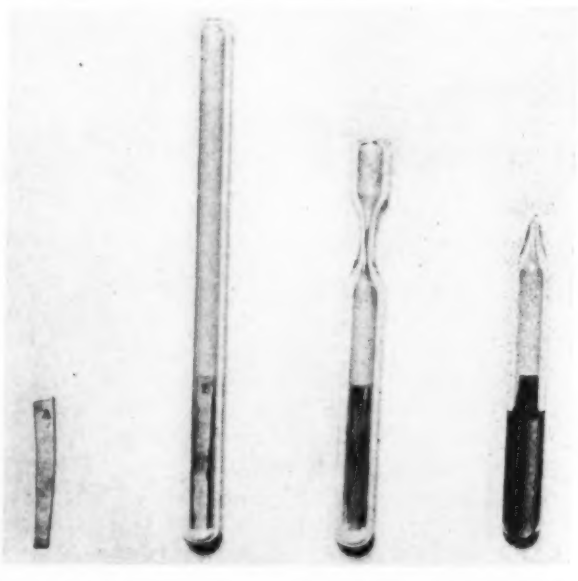
2. A standard aerosol formulation was chosen for this study so as to minimize the number of variables. The one chosen had the composition:

3%	DDT (aerosol grade)
2%	pyrethrum concentrate (20% pyrethrins)
10%	APS-202 oil
85%	"Freon-12" fluorine refrigerant

The method of charging this formulation was to weight in directly the requisite quantity of DDT. The tube was then constricted at about 15 cms. from the closed end so that the opening at the constriction was between 1.5 and 2.5 mm. The object in making such a constriction is to enable the final sealing to proceed more easily. After the constriction is made the pyrethrum concentrate is introduced by means of a hypodermic syringe to which is attached a No. 22 B. & D. hypodermic needle. The APS-202 oil is similarly charged. Proceeding by this technique, accurate quantities of these liquids can be introduced without allowing any of the liquid to contact the glass walls at the constriction. The tube is finally cooled with liquid nitrogen, attached to a vacuum system, and evacuated. "Freon-12" is charged vapor phase into the evacuated and cooled tube, the quantity charged being controlled by regulating the pressure in a charging system of known volume.

3. The compound being tested as the inhibitor was always added in an oil solution. It is impractical to measure in directly the small amounts of the compounds required, so a solution of proper concentration in the oil was used to attain the final desired composition. Standard practice was to test a solution containing 0.015 weight per cent of the inhibitor. Several exceptions to this concentration are noted in the proper places.

The tube with its charge was sealed at the constriction, giving a final container of some 13 ml. capacity. The amount of charge was so adjusted as to total 5-6 ml. causing most of the metal strip to be immersed in the liquid but allowing some to remain in the vapor phase. The tubes were heated at 150°F. (67°C.) for the duration of the test. Each tube was observed every week, until the test had progressed three months, then bi-weekly until six months had elapsed at which time the tube was removed from the oven. Any tube exhibiting decided decomposition



Test tubes for standard corrosion test: A. metal strip cut from commercial "Aerosol" container; B. "Pyrex" brand test tube with DDT and metal strip; C. constricted tube ready for final charging; D. sealed tube containing all ingredients ready for test.

TABLE I.

Test No.	Compound	Days of Heating	Condition of Strip	Corrosion in inches/mo. X 10^5	Condition of glass	Condition of liquid
1	—None	129	Poor	2.3	tan solid deposit	clear light yellow-green
2	—Hexyl Amine[4]	59	Poor	7.7	dark brown coating	cloudy brown
3[2]	—Oleyl Amine[5]	78	Poor	12.9	black coating	cloudy brown
4[3]	—Oleyl Amine[5]	78	Poor	—1.8	tan deposit	clear light amber
5	—Aniline[6]	52	Poor	14.9	dark brown coating	clear light amber
6	—Salicylal Amino Guanidine[7]	120[1]	Excellent	Nil	clear	clear yellow-green
7	—1-Nitropropane[8]	129	Poor	5.5	brown solid deposit	clear light yellow-green
8	—Nitrobenzene[6]	64	Poor	13.8	black coating	clear yellow
9	—Sodium Nitrite[9]	157	Poor	4.0	brown solid deposit	clear light yellow
10	—Picolinic Acid[7]	120[1]	Good	16.2	clear	fine white suspension
11	—Maleic Anhydride[10]	92	Poor	5.4	brown solid deposit	clear green
12	—Propylene Oxide[12]	71	Excellent	Nil	clear	clear yellow-green
13	—Phenylethylene Oxide[11]	188	Fair	0.6	brown solid deposit	clear yellow-green
14	—Quinone[11]	183	Fair	1.5	light tan solid deposit	clear green
15	—Hydroquinone[9]	183	Fair	4.3	tan solid deposit	clear green
16	—o-Xylohydroquinone[7]	157	Poor	135.	brown solid deposit	clear green
17[2]	—Calcium Xylol Stearate[7]	78	Poor	6.0	dark brown coating	clear yellow green
18[3]	—Calcium Xylol Stearate[7]	78	Poor	6.6	tan solid deposit	clear yellow green
19	—Dibutyl Phosphite[7]	92	Poor	10.5	dark brown coating	clear light green
20	—Pinene Thiophosphite[7]	92[1]	Good	1.4	light tan solid deposit	clear light amber
21	—"Lorol"[12,13] Sodium Phosphate[6]	183	Fair	5.7	brown solid deposit	clear yellow
22[2]	—Petroleum Sodium Sulfonate[7]	183	Good	—0.3	thin cloudy film	clear green
23[3]	—Petroleum Sodium Sulfonate[7]	183	Fair	3.4	tan solid deposit	clear yellow green
24	—Dodecyl Mercaptan[12]	92[1]	Excellent	2.2	clear	clear yellow green
25	—Thiosemicarbazide[11]	92[1]	Fair	11.8	brown solid deposit	clear brown
26	—E-Thio-caprolactam[7]	57	Poor	15.5	black coating	clear brown
27	—2-Mercaptothiazoline[7]	57	Poor	22.8	dark brown coating	clear brown
28	—2-Mercaptobenzothiazole[7]	183	Good	2.9	tan solid deposit	clear tan
29	—2-Mercapto-6-ethoxy-benzothiazole[7]	92[1]	Fair	8.5	brown solid deposit	clear tan
30	—2-Mercapto-4-methyl-5-amino-benzothiazole[7]	57	Poor	26.5	black coating	clear dark brown
31	—Dimercaptothiazole from m-Toluylene Diamine[7]	57	Poor	21.2	brown solid deposit	clear brown
32	—1,3-Dihydro 4,6,6-trimethyl-2-thio-ketopyrimidine[7]	57	Poor	13.2	black coating	clear dark brown

1. Test being continued.
2. Concentration of the inhibitor was 0.15 per cent of total weight.
3. Concentration of the inhibitor was 0.0015 per cent of total weight.
4. From Sharples Chemicals, Inc.
5. From Armour & Company.
6. From Du Pont Chambers Works.
7. From Du Pont Jackson Laboratory.
8. From Commercial Solvents Corp.
9. From Mallinchrodt Chemical Works.
10. From National Aniline Division.
11. From Eastman Kodak Company.
12. From Connecticut Hard Rubber Company.
13. Registered trade-mark for mixture of normal primary fatty alcohols, lauryl alcohol predominating.

was removed before the conclusion of the six months period.

The following observations were recorded for each tube each time it was inspected:

(1) Condition of strip — visual evaluation only

(2) Corrosion of strip — semi-quantitative figure based upon the average of results from the formula:

$$C = \frac{43.9\ W}{AST}$$ where

C = corrosion in inches/month
W = loss in weight in grams
A = area of test piece in square inches
S = density in grams per cubic centimeters
T = Time in hours

(3) Condition of glass — qualitative observation of glass wall surfaces for deposits

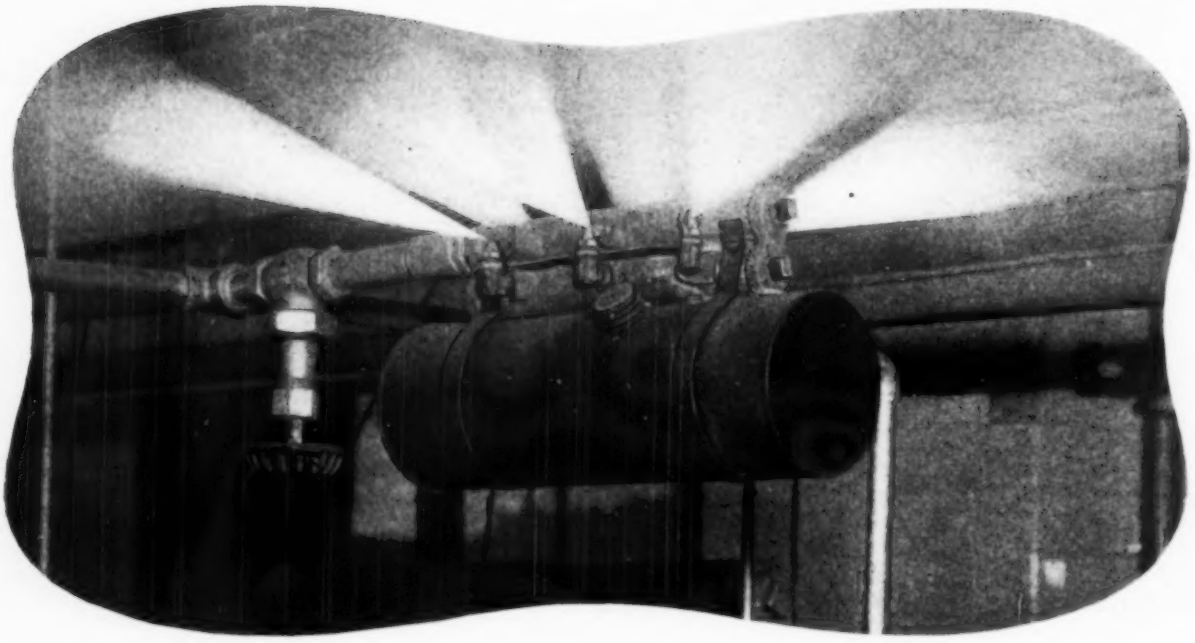
(4) Condition of liquid-qualitative observation of liquid for color and suspended solid matter.

The materials tested and the results observed are presented in Table I. All chemicals involved are of usual C. P. quality, no effort having been made to further purify the available products. All the results recorded in the table are based upon the average of two or more duplicate tests.

Discussion of Results

TEST 12 using propylene oxide was instigated only as a check on our test method with the method of Hazen

(*Turn to Page* 152A)



Pyrocides* FOR THE QUALITIES THAT *SELL*

INDUSTRIAL INSECTICIDE USERS

● It's the ultimate buyer, the industrial consumer, who decides what an insecticide should be able to do in a diffusing machine. His own rules of sanitation plus federal laws make him insist on *efficiency of operation, safety, freedom from odor and stains.* His fear of slow-dying insects dropping into his food product causes him to demand *quick kill.* The sound policies of economy which have made him a successful manufacturer compel him to seek a *fair price.*

And you can be certain that his appreciation of true value will make him hesitate to buy any insecticide for his diffusing machine if it lacks *even one* of these qualities.

So if any of your mixtures do not rate AA on *all* these counts, we suggest you investigate Pyrocide 20, the purest form of pyrethrum commercially available.

Pyrocide 20 offers *safety and freedom from odor and stains.* Pyrocide 20 assures *freedom from resin*—a boon to production and a guarantee of efficient machine operation. Pyrocide 20 gives *clarity at high concentrations.*

And Pyrocide 20 is now available at the *lowest cost in years.* Which means you can have *all* the qualities needed to sell today's user of diffusing machines, without paying a premium price. Let us quote you on Pyrocides. Just wire or write:

Whatever your insecticide mixture, additional amounts of Pyrocide (Pyrethrum) will increase those qualities which make people eager to buy and use it.

*Trade Mark Reg. U. S. Pat. Off.

Better Insecticides

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MAKERS OF INSECTICIDES FOUNDED 1902

MINNEAPOLIS, MINNESOTA

MILDEW PREVENTIVES

By Milton A. Lesser

AFTER centuries of resigned acceptance, something really is being done to control mildew. Although the mildew problem had previously received some attention, the need for a solution became critical during the war when American materiel began to flow toward the hot, humid islands in the South Pacific. In such climates, fabrics deteriorate rapidly, leather rots, equipment becomes useless and fine instruments are ruined from the effects of mildew and other molds.

Although the problem is not so acute in more temperate zones, the housewife has long known that mildew on rolled-up washing or on bathroom shower curtains means shortened usefulness from these items as well as ugly stains. All too familiar is the way bread becomes moldy and the unpleasant fashion in which books, papers, walls and clothing show mildew stains. More insidious is the effect of molds on other materials, as when expensive awnings rot and tear, beach chair and clotheslines give way unexpectedly, and raincoats and umbrellas fall apart just when they are most needed. The musty odor of closets, closed rooms or damp cellars also indicates the presence of mildew. Industry also pays a high toll to mildew.

It has been estimated that the bill for mildew and rot damage in the United States amounts to at least one hundred million dollars each year. (1) The cost would be much higher if mold damage to food crops were also included. Of definite interest in this connection is the finding that about 75 per cent of this country is vulnerable to mildew attack. This fact was graphically illustrated in a special map prepared by Givaudan-Delawanna, Inc. This map shows that humidity, not temperature, is the key factor in the mildew problem. The temperature can range as low at 45° F. and still invite damage as long as the humidity is 75 per cent or more. The critical areas, especially during the summer months, are in the South and South Eastern States, where high humidity combines with temperatures exceeding 80° F. Mildew thrives in damp, poorly ventilated, and badly lighted locations.

Mildew is a form of mold and molds are simple plants belonging in the fungus family. As noted by Block, (2) mold is sometimes called mildew, rot or decay, depending on the kind of damage done. Mildew is a surface growth and causes surface damage and spotting, while rot and decay molds grow beneath the surface and may cause complete deterioration. Examination of a mildew growth reveals a net work of threads topped by a mass of color, usually black, green or yellow. The colored material is a powdery dust consisting of spores. These can remain dormant for years until conditions are suitable for growth.

In their search for nutrition, fungi may travel long distances, even

growing across glass or metal surfaces. In such cases, their paths are often marked by an etching effect from the chemical action of by-products. Fungi are able to attack a great variety of substances, but not all fungi grow equally well on all materials. Some thrive on proteins, while others, as typified by mildew-forming varieties. do particularly well on cellulose. With small nutritional requirements, mildew may appear on surfaces that seem to be perfectly clean. For example, hand prints outlined with mildew may sometimes be seen on clean clothes that have been handled only for storage. Perspiration from the hands or dust from the air can supply sufficient nutrient to permit unsightly mildew growth when other conditions are favorable. Noteworthy in this connection is Harold's (3) statement that, in general, mildew damage on textiles due to mold fungi is of greater magnitude than that due to bacteria.

The problem of controlling mildew has been attacked along both physical and chemical lines. Physical methods aim at combatting dampness by maintaining the relative humidity of the air at 70 per cent or less, thereby creating conditions unsuitable for the growth of molds.

Two ways are open for achieving such optimal humidity conditions. The first requires that the water-holding capacity of the air be increased by raising the temperature, thus lowering the relative humidity. This principle is often used when the heating unit is started to drive dampness from the house during a spell of rainy weather. Another familiar expedient based on the same rule is the practice of keeping a small electric light burning in the closet. This will usually raise the temperature enough to stop mildew. (4)

The second method of lowering the relative humidity employs desiccants to remove moisture from the air. Calcium chloride and silica gel are the hygroscopic agents commonly used for this purpose and have proved valuable for keeping the air in storage rooms, closets and cabinets below the safety level of 70 per cent relative humidity.

Relatively inexpensive, calcium chloride is capable of absorbing almost three times its weight in water in a normal summer temperature of 77° F., at 78 per cent relative humidity. (5) When calcium chloride has taken on its full capacity of water it dissolves and means must be provided to catch the solution. Inexpensive stands for exposing calcium chloride to the air and catching the drip are available commercially. This method of drying is quite effective in closed rooms where little or no moisture is being added to the air by laundering, cooking or the like. The chemical is renewed as it is used up. Smaller units, with suitable supports and drip receivers, should also make attractive household sales items. Flakes or pressed cylindrical briquettes of calcium chloride can be used in such units. The dissolved fluid must be removed as the desiccant is renewed. The fluid should not be allowed to come in contact with clothes because it can cause deterioration of the fibers. Clothes so splashed should be washed immediately with water. (2)

SILICA gel is free of this hazard and the annoyance of removing dissolved salt solution, but it has only about one-quarter the moisture-absorbing properties of calcium chloride. Hence considerably more silica gel must be used to obtain a comparable air-drying effect. Silica gel, however, retains its dry form and may be used repeatedly if it is regenerated by heating in an oven for several hours at 300 to 350° F. The need for regeneration can be indicated by including a few "tell-tale" granules. Such granules are prepared by treating ordinary silica gel with cobalt chloride so that it is blue when fresh but turns pink when saturated with moisture.

Because they are dry even when saturated and are not harmful, silica gel granules may be scattered into clothes and other articles prior to storage as a precaution against mildew. The material is also very effective when used in open pans or in suitable units for closets and store rooms. Such units are similar to the perforated metal containers for moth crystals, but are considerably larger and flatter. (2) The moisture-absorbing efficiency and safety of silica gel is indicated by its extensive use to protect overseas shipments from mildew and corrosion during the war. With cessation of hostilities, this material has found similar utility for protecting military equipment under the Army Ordnance long-term storage program. (6)

In the chemical approach to the control of mildew, many fungicides and fungistats have been developed and studied. Their efficiency and suitability can be determined by various more or less standardized tests. Because textile fungi grow best in dark, humid places, and since the soil is a rich source of most types of fungous spores, the soil burial test is rapidly forging ahead as a test of protective action. (1) In this method, fabrics are treated with the materials under investigation and are buried in the ground. After a suitable time, the samples are tested for loss of tensile strength. An effective fungicide will prevent the growth of mildew and therefore should reduce to a minimum the loss of tensile strength caused by such molds. Although this test affords the severest conditions for testing fungicides, it is difficult to standardize the results.

Reproducible results are more readily obtained by inoculation tests. In these procedures, the fabric is exposed to typical molds under conditions of humidity and temperature favorable to their growth. *Chaetomium globosum* is the organism favored by many investigators, (8, 9) but molds like *Metarrhizium glutinosum* and *Aspergillus niger* are frequently employed for testing mildew preventives. (10) The effectiveness of the substance is judged by evaluating the mold growth found in a given time.

The question of toxicity and irritation assumes major importance when mildew-controlling chemicals are applied to items for personal or household use. Patch tests are generally employed to determine these factors. (11)

By these and other tests it is possible to determine which compound is most suited to a particular job. Thus, for tents and awnings, the fungicide must be very resistant to leaching and sunlight, should be non-volatile, and preferably colorless. For articles of personal and household use, the compound must be odorless and non-

AREAS VULNERABLE TO MILDEW ATTACK IN THE U. S.:—Mildew and rot, generally believed to be a problem only in the semi-tropical areas of the South, actually attack textile, paper, and other vulnerable materials throughout the United States, doing great damage in 75 per cent of the nation, and costing the American public, by conservative estimate, more than 100 million dollars annually. This map, prepared by Givaudan-Delawanna, Inc., New York, shows those areas of the United States which are vulnerable to attacks during an average July. Humidity, not temperature, is the key factor in the fungi problem. Temperature can range as low as 45 degrees F. and still invite fungi destruction as long as the humidity is 75 per cent or more. The vertical lines on the map mark areas where the humidity exceeds 80 per cent (dangerous), the dotted areas where it ranges from 60 to 80 per cent (vulnerable), and the white areas where it is less than 60 per cent (relatively safe). The horizontal lines indicate the critical areas where high humidity combines with temperature exceeding 80 degrees F.

irritating to the skin. For foodstuffs, toxicity is the most important factor. (2)

ONE of the most important postwar developments in this field has been the production of fungicides suitable for use as general household anti-mildew agents. A check of technical publications has failed to reveal much information concerning these general household anti-mildew agents. However, considerable data is available in the literature supplied by manufacturers of these products.

In a sense it may be said that these general household anti-mildew agents present a new concept in sanitation, since they kill fungi that are unaffected or only mildly affected by ordinary disinfectants. Some idea of their usefulness is indicated in a list of applications for a general household fungicide based on a raw material available as "Nuodex 87." (A) The final consumer item, as supplied by sanitation products manufacturers, is useful in (a) the laundry to prevent mildew and musty odors in clothes before ironing, (b) general household sanitation in the bathroom, kitchen or laundry, (c) prevention of odors in garbage pails, (d) shower curtain mildew-proofing, (e) protection of clothes in storage, (f) prevention of mildew growth on furniture or rugs, (g) prevention of mold and odor growth in refrigerators, (h) cleaning agent and mold preventive for bread boxes, (i) mildew proofing leather and shoes in the home, (j) rinses for stockings and other clothing to prevent skin fungus infections, (k) odor prevention for diaper cans, and (l) spraying summer bungalows, cabins and the like to avoid mildew-musty odors.

Of course such a product is not limited to the household market. The mildew-combatting material can be put up in larger units or in more concentrated form for sale to sanitation maintenance men in hotels, hospitals, office and public buildings, schools, dairies, breweries, food plants and other places where mildew and fungi control is a problem.

The producers of Nuodex 87 describe their material as a liquid concentrate of an essentially colorless and odorless, non-irritant organic fungicide. It contains no phenols, mercury or heavy metals and is soluble in water, oils or solvents. Aside from its use as a base for general household mildew proofers, it is useful for protecting textiles during dyeing and storage, for treating wet wash and for mildew-proofing wearing apparel. A mixture of 5 per cent by weight of Nuodex 87 and 95 per cent by weight of water is suggested for consumer sale, but the concentration of the solution to be marketed is optional. Details on dilutions and labeling requirements are available to processors from the manufacturers of the anti-mildew base.

Another base material for making anti-mildew products for general household use is available under the trade name, "Hyamine 3258." (B) Still being investigated, it is described as a water-dispersible quaternary ammonium pentachlorophenate, which combines the anti-fungal properties of quaternary ammonium salts with those of the chlorophenates. Available as a light tan paste containing 40 per cent active fungicide, it is suggested that household product manufacturers can prepare a solution containing 5 per cent active ingredients, as follows:

	Gals.
Hyamine 3258	5
Isopropanol	10
Water	25

The manufacturer of such a solution can simply indicate on his label that the material should be diluted 1 to 5, with water, for final use, since for most applications a solution containing 1 per cent active ingredients provides sufficient protection against the growth of fungi.

A number of applications, like the spraying of cellar walls and closets, treating of shoes and other leather goods, and the washing of drapes, curtains and awnings, are being investigated. On the basis of its strong fungicidal properties, Hyamine 3258 has been suggested for incorporation in a rug shampoo along with non-ionic detergents; in formulations for use in dry-cleaning establishments; for treating storage bins, refrigerators and warehouses in which fruits, vegetables,

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meats and other food products are stored, for the treatment of baskets and crates used for packaging fruits and vegetables, as well as for mildew-proofing other containers and packages; for incorporation with a water-soluble insecticide to provide a combination mildew-proofing and moth-proofing agent; and for treating ropes to prevent mildew.

In passing, it should be noted that some of the quaternary ammonium compounds are fairly effective as fungicides, are of low toxicity and are non-irritating. In addition to fungicidal and germicidal action, certain of these compounds are very efficient detergents. (2) Their value as general mildew-preventing items is worth study.

A consumer anti-mildew product on the market differs from the previously discussed items in that it is an emulsion. Called "Mil-Du-Rid," (C) its active ingredients are phenyl hydroxy benzene, dimethyl carbinol, and soap in a vehicle consisting of mineral oil and water. It is formulated for use on clothing, furniture, rugs, woolens, cottons, shower curtains, walls, closets, garbage pails, leather, luggage, books, jackets, shoes and in cellars, refrigerators, bread boxes and food containers. Also active as a disinfectant, it may be added to the water for general household cleaning, particularly in the bathroom.

THE mildewing of textiles has long been a major problem. As remarked by Hardy, (12) the occurrence of mildew on yarn or cloth is encouraged by farinaceous sizes, excessive alkaline treatment, strong chlorination and nitrogenous decomposition of wool under harsh treatment. Cellulose, he notes, provides nutrient for certain fungi, while silk gum and raw cotton contain enough albumin for others. Although synthetic fibers like acetate rayons and nylon do not support mold growth, mildew will appear on such fabrics when they become soiled with nutrients for fungi. (13)

The mildew-proofing of textiles has advanced tremendously during recent years. (14) When more extensively used, such treatments will substantially increase the life of many household articles like clothing, awnings, raincoats, beach chairs, shower curtains, clotheslines, umbrellas and many other items. The mildew-proofing of fabrics in fire hoses and safety belts can contribute to safety, while similar treatment for conveyor belts and ropes will be a boon in industry.

Many anti-mildew chemicals for treating textiles and fibrous materials are now available. The war, of course, provided a great impetus to the development of fungicides for treating literally hundreds of textile items. Investigators did not start from scratch, however, for quite a number of suitable agents were known prior to 1941, a fact quite evident in the very comprehensive study made by Furry, Robinson and Humfield. (15) War-accelerated research did serve to eliminate many chemicals from the field and encouraged the search for more suitable products. This is quite evident in the recent technical (16, 17, 18) and patent literature. (19, 20, 21, 22)

The chemical agents now most generally employed for mildew-proofing fabrics fall into three main classes. These are the chlorinated phenols, the mercurials, and metallic compounds. According to Block's (2) listing some of the most useful textile fungicides are: copper 8-quinolinolate, copper naphthenate, zinc naphthenate, copper ammonium fluoride, pyridylmercuric stearate, salicylanilide, and dihydroxy-dichloro-diphenylmethane. Most of these products are suitable for application in textile mills or fabric finishing processes. However, the last two compounds are adaptable for consumer use.

Salicylanilide, available commercially as the "Shirlan" fungicides, (D) was developed in England in 1928. (23) Favorably received as a highly effective fungicide, (3, 24, 25) it has practically no odor or color, is non-irritating and low in toxicity. Block suggests that it can be applied in the form of a solution made by dissolving 0.5 ounces of salicylanilide in 1 gallon of isopropyl alcohol. Dipping the fabric in this solution is the best way to get complete coverage, but if more convenient, it may be sprayed onto clothing blankets, curtains or the like. This compound has given satisfactory service for years on cotton and woolen goods in storage and in shipment. It is removed by laundering and dry-cleaning and is not satisfactory for severe outdoor exposure.

Dihydroxy-dichloro-diphenylmethane, which has also received high ratings as a mildew-proofer, (8, 10, 26) is sold under two trade names: "Compound G-4" (E) and "Preventol GD." (F) With a high fungicidal value, the compound is non-toxic, insoluble in water and has a faint antiseptic-like odor. It is not recommended for articles which are to be laundered repeatedly. Methods for applying this fungicide in textile mills are provided by both producers. However, one source has also given details for making mildew-proofing and rot-proofing preparations for application by the consumer. A typical formula for such a solution is as follows:

	Parts
Compound G-4	2.0
Paraffin wax	4.0
Isopropyl alcohol (99%)	10.0
Stoddard solvent	84.0

Dissolve the fungicide in the alcohol. Dissolve the wax in the Stoddard solvent. Mix the two solutions. Filter if a clear product is desired. It may be applied by brushing, spraying or dipping, either outdoors or in a well-ventilated room away from open flame.

Such a solution has wide application on many products, like sails, ropes, tarpaulins, tents, awnings, life preservers, woven fire hose, roof and porch deck canvas, truck and boat covers, nets, sporting goods, beach chairs, umbrellas, leather goods, and many other items.

A somewhat similar solution has been recommended by Bayley (27) for preventing deterioration of the cotton or jute backing on rugs as the result of mildew attack. To be applied to the back of the rug by spraying, the solution is made from:

	Parts
Preventol GD or Compound G-4	1
Isopropyl alcohol	8
Stoddard solvent	192

Other methods for mildew-proofing textiles which can be applied by the consumer are available in the technical literature. For example, Hardy (28) has reported that a reasonably serviceable mildew-proofing method with readily-available substances is to dip the cloth for 10 min-

(*Turn to Page* 152c)

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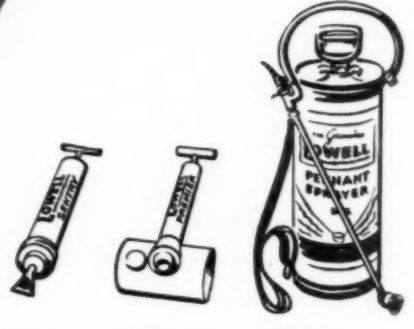

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QUATERNARIES vs. PHENOLICS

Germicidal Effectiveness of some Quaternary and Phenolic Compounds Reported Together with Time-Survival Numbers of E. Typhosa and S. Aureus

By L. H. James*, James Laboratories, Chicago

THE bacteriostatic effects of low concentrations of quaternary ammonium compounds was one of the earliest properties recognized when these substances were used as germicides. Various procedures have been used for the neutralization of the static effects, such as a large volume of culture medium (Klarmann and Wright), soap (Pressman and Rhodes), anionic detergents (Valko and DuBois), and by the separation of the bacterial cells from the disinfectant mixture by centrifugation (DuBois). Yet today no completely satisfactory neutralizing agent or procedure applicable within the medication tube has been devised.

The influence of these bacteriostatic properties upon results reported in the literature can best be understood if we know the greatest concentration of a quaternary (the minimum dilution) that will be completely neutralized by the sub-culturing medium. The dilutions at which the bacteriostatic effects are lost in the nutrient broth and agar normally used in disinfectant testing were determined with no other neutralizing agent present. Five quaternaries, a cresylic disinfectant and phenol were prepared in serial dilutions, portions transferred to petri plates, and poured with nutrient agar containing either *E. typhosa* or *S. aureus*. The plates were incubated at 37° C., and the amount of growth recorded as normal, inhibited, or absent. Similarly, dilutions of the same compounds were added to nutrient broth, mixed, inoculated, and incubated. Growth was recorded in the same manner. Taking into account the further dilution when each disinfectant was mixed into the broth or agar, the results were recorded in terms of the final concentration of each compound. In Table 1 is shown the lowest dilution at which each compound exerted no apparent inhibitory effect.

It should be pointed out that the bacterial cells when inoculated into the agar plates had not been exposed previously to the disinfectant. Thus the bacterial cells themselves were not "injured" by exposure to a disinfectant. Experience in this laboratory and elsewhere has indicated that in subcultures from a medication tube mixture, bacteriostasis is observed in still greater dilutions.

The speed of reaction between the disinfectant and the constituents of the culture medium is a factor that influences numerous test procedures. In the agar cup plate test of antisep-

TABLE 1

Minimum dilution of five quaternary disinfectants and phenol necessary to eliminate bacteriostasis against *S. aureus* and *E. typhosa*

Disinfectant	*Culture*	*Final dilution of active ingredient in culture medium*	
		Broth	*Agar*
A	S. aureus	1- 100,000	1- 150,000
B		1- 800,000	1-1,200,000
C		1-1,000,000	1- 700,000
D		1-1,000,000	1-1,000,000
E		1- 800,000	1-1,200,000
Phenol		1- 600	1- 600
Cresylic		1- 8,000	1- 5,000
A	E. typhosa	1- 50,000	1- 25,000
B		1- 80,000	1- 80,000
C		1- 50,000	1- 5,000
D		1- 100,000	1- 50,000
E		1- 120,000	1- 12,000
Phenol		1- 600	1- 800
Cresylic		1- 3,000	1- 2,000

* Presented at the Disinfectant Symposium, Natl. Assn. Insecticide & Disinfectant Mfrs., Chicago, June 9, 1947.

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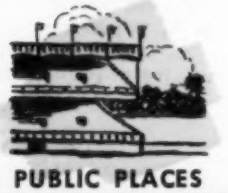

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tics, and in the agar plate method for the assay of penicillin, the results obtained are influenced by this speed of reaction. Also, in numerous experiments in this laboratory it has been observed that both nutrient agar and broth containing a disinfectant in sufficient concentration to at least produce bacteriostasis, may not, after a period of time such as 24 or 48 hours, show such bacteriostatic properties. During the period of time immediately following the addition of the disinfectant, it then is possible, and probable, that "injured" bacterial cells will die.

The length of time necessary for the bacteriostasis to disappear (if it does) will influence the results. An experiment was made in which a disinfectant was added to the liquefied agar and then held at 48° C. for short periods of time before the addition of the test culture. After inoculation, the agars were immediately poured into plates, hardened, and incubated. The results are shown in Table 2.

The dilution of 1-800,000 is apparently approximately the concentration at which this quaternary is no longer bacteriostatic in agar plates, and the additional reaction time of one hour did not affect the results. (This concentration agrees closely with the previous result recorded in Table 1.)

TABLE 2
Influence of holding upon reaction between quaternary "C" and culture medium (nutrient agar) and bacteriostasis

Disinfectant (final diln.)	*Holding period after admixture of disinfectant and warm nutrient agar*		
	0 mins.	*15 mins.*	*60 mins.*
1- 40,000	no growth	no growth	no growth
1- 400,000	no growth	no growth	no growth
1- 800,000	sl. inhibition	no inhibition	sl. inhibition
1-1,200,000	no inhibition	no inhibition	no inhibition
1-1,600,000	no inhibition	no inhibition	no inhibition
1-2,000,000	no inhibition	no inhibition	no inhibition

TABLE 3
Multiplication of *S. aureus* 209 in broth in the presence of .02% sodium oleate

Inoculum 115,000 *cells per tube*

Tube No.		*Incubation period:* 5 *hours*	24 *hours*	48 *hours*
S_1	No oleate	322,000	620,000,000	1,140,000,000
S_2		405,000	790,000,000	850,000,000
S_3		342,000	610,000,000	910,000,000
S_4		434,000	670,000,000	780,000,000
S_5		697,000	770,000,000	1,070,000,000
Avg.		440,000	692,000,000	950,000,000
S_6	Oleate present	299,000	310,000,000	740,000,000
S_7		306,000	205,000,000	910,000,000
S_8		408,000	310,000,000	620,000,000
S_9		403,000	227,000,000	810,000,000
S_{10}		554,000	350,000,000	710,000,000
Avg.		394,000	280,000,000	758,000,000

TABLE 4
Growth of *S. aureus* in broth with and without added sodium oleate after varying inoculations

No. bacteria inoculated	*Soap added*			*No soap added*		
	Tube No.	*Visual observation*	*Count per ml.*	*Tube No.*	*Visual observation*	*Count per ml.*
8,500	1	Good growth	660,000,000	2	Good growth	470,000,000
850	3	Good growth	290,000,000	4	Good growth	730,000,000
212	5	Good growth	154,000,000	6	Good growth	810,000,000
85	7	Good growth	202,000,000	8	Good growth	288,000,000
8	9	No growth	0	10	Good growth	750,000,000

Thioglycollate broth, because of its composition, and also the fact that it is widely used under fixed formulae, was tested in a preliminary way as a neutralizing agent for the quaternaries. The broth was prepared in normal, double, and triple strengths, and quaternary "C" added to final dilutions of from 1-25,000 to 1-1,000,000. After the addition of the disinfectant, the broths showed the following pH values: normal strength—pH 6.95-7.0; double strength—pH 6.75-6.8; triple strength—pH 6.6.

The broths were inoculated with S. *aureus*. After incubation, the 1-1,000,000 dilutions in all broths showed growth, as did also the 1-500,000 dilution in the triple strength. This represented very little neutralization beyond that obtained in normal nutrient broth, and the medium was not tested further.

THIS investigation was concerned firstly with the development of a test procedure applicable to the medication tube, in order to eliminate losses on the glass. A soap was selected for the conditions prevailing in this investigation, where the neutralizing agent was to be sterilized; was to be added to the medication tube, and therefore limited to the capacity of the tube; was to be sub-cultured in agar; and where a property of releasing the bacterial cells from the glass walls was important. Although some inhibitory action by the soap is recognized, it is not known whether it prevents growth or reduces the rate of multiplication or the rate of metabolism when used in the presence of a quaternary. A test of the influence of sodium oleate upon the rate and extent of multiplication by S. *aureus* in broth was made. Ten tubes of F.D.A. broth were taken from the same batch. To each of five tubes was added 1 ml. of a 0.2 per cent solution of sodium oleate, and the entire lot sterilized as usual. Each of the 10 tubes was inoculated with 0.1 ml. of a 1-2,000 dilution of a pool of 6 tubes of 24-hour growth of S. *aureus* in F.D.A. broth. (The practice of preparing a pool of 4 tubes of S. *aureus* culture growth from which inoculations were made was followed throughout this investigation.) After periods

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of 5, 24 and 48 hours of incubation, dilution plates were prepared for an estimation of the numbers of living cells present. The results are shown in Table 3.

The multiplication of S. *aureus* in the presence of the oleate was less than in the controls. For the purposes of this study, however, growth in all tubes was distinct and definite, and ample to be positively recognized.

The concentration of soap which would not be inhibitory to bacterial colony development in nutrient agar was determined by mixing sterilized oleate solution into melted nutrient agar, which then was inoculated with *E. typhosa* or S. *aureus*, poured into petri plates, solidified, and incubated. A final concentration of 0.1 per cent soap neither reduced colony formation nor interfered with reading the results with both organisms.

Experiments in which sub-cultures were made from the medication tube mixture of disinfectant and bacteria would probably result in the inoculation of a relatively few bacterial cells in some instances. Although in tests for total numbers of bacteria a count of only a few cells has doubtful significance, an experiment was made in which varying numbers of S. *aureus* cells were exposed to .067 per cent oleate for 1 minute, the solution then diluted with broth to give a final soap concentration of .0168 per cent in standard F.D.A. broth. The inocula varied from 8,500 to less than 10 per flask. After incubation, total numbers were determined, with the results shown in Table 4.

A small inhibitory action by the oleate is evident in the lower total count results. All tubes except No. 9 showed obvious growth, and No. 9 remained clear. Thus, visible growth occurred in broth containing oleate with small numbers inoculated therein, except when the number presumably was only 8 cells.

The inhibitory action of the sodium oleate is recognized, therefore, as a reduction in the rate of multiplication. It now appeared reasonable to expect bacteria to produce visible growth in the presence of the sodium oleate, with the possible exception that a very few surviving cells might not develop.

LITTLE information as to the manner or rate of killing action of disinfectants can be obtained by total transfer methods, or by sub-culturing in broth, where a very small number of living cells will mask the extent of killing action of any disinfectant. It is recognized that the broth sub-culturing procedures constitute a routine test most valuable for control purposes, and the writers believe that much fuller information on the action of any disinfectant can be obtained by studies using an agar plating procedure, such as the Cade-Halvorson method or modifications of it.

The ideal neutralizing agent would (1) destroy all germicidal effects to be exerted by the disinfectant remaining in solution, (2) remove from the unkilled bacterial cells all disinfectant and restraining influences, (3) introduce no germicidal or bacteriostatic effects itself, even in quantities necessary to neutralize high concentrations of the germicide. The adsorption of quaternaries and test bacteria upon the surfaces of laboratory glassware is known to influence the experimental results. Thus an additional important property of a neutralizing agent satisfactory for testing these compounds would be that it re-suspend the unkilled bacteria in the fluid substrate. This is especially important before any sub-culturing procedure is applied.

Several comparisons were made between (1) swabbing and not swabbing, (2) swabbing in water vs. swabbing in broth, and (3) swabbing in water vs. swabbing in added broth and in added soap solution. Although better recoveries were obtained by swabbing in water than by not swabbing at all, agreeing with Cade's recent work, nevertheless best recoveries occurred when the medication tube was swabbed after the addition of the soap solution.

Previous studies using soap as a neutralizing agent generally have utilized molecular equivalents, or less. The possible value of greater ratios was tested against quaternary "E" in the presence of S. *aureus*, as shown in the Table 5. The sodium oleate was mixed with the disinfectant in the medication tube, and after 10 minutes the culture was added. Agar was then mixed in the tube, and the mixture poured into petri plates at once.

Examination of the results in Table 5 shows that in general the bacteriostatic effects of quaternary E were largely eliminated when the ratio of soap to disinfectant (gram basis) fell between 10X and 15X. On the basis of these results, a soap-disinfectant ratio of 10X appeared to be the most satisfactory in reducing to a minimum all inhibitory effects by the disinfectant and the sodium oleate.

A procedure was thus available which would yield information on the total numbers of bacteria surviving the disinfectant exposures, and which could be applied in a test of a series of disinfectant dilutions directly from the medication tubes. Briefly, the method is as follows:

(1) Dilutions of the disinfectant are placed in medication tubes, generally in 5.0 ml. amounts.

(2) The test culture is added in 0.5 ml. amounts, or proportional to the amount of disinfectant.

(3) The disinfectant-culture mixture

TABLE 5

Effects of increased ratios of soap to disinfectant upon bacteriostasis by quaternary E against *S. aureus*

Disinfectant dilution	*Amount of sodium oleate and ratio to disinfectant*				
	.0007 *gm*	.007 *gm*	.014 *gm*	.028 *gm*	.056 *gm*
1-5,000	0 (.7X)	mod. inhib'n. (7X)	sl. inhib'n. (14X)	no inhib'n. (28X)	no inhib'n. (56X)
1-7,500	0 (1.1X)	sl. inhib'n. (11X)	no inhib'n. (21X)	no inhib'n. (43X)	no inhib'n. (86X)
1-10,000	3 (1.4X)	no inhib'n. (14X)	no inhib'n. (28X)	no inhib'n. (56X)	no inhib'n.
1-15,000	mod. inhib'n. (2.1X)	no inhib'n. (21X)	no inhib'n. (42X)	no inhib'n. (84X)	no inhib'n.
1-20,000	mod. inhib'n. (2.8X)	no inhib'n. (28X)	no inhib'n. (56X)	no inhib'n.	no inhib'n.
1-25,000	sl. inhib'n. (3.5X)	no inhib'n. (35X)	no inhib'n. (70X)	no inhib'n.	no inhib'n.

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is held in a constant temperature water bath as usual.

(4) An amount of sterile 0.2 per cent sodium oleate equal to 10X the amount of disinfectant present (on a weight basis) is added to the medication tube mixture.

(5) The walls and bottom of the medication tube are swabbed with a sterile cotton swab.

(6) One ml. and dilutions thereof are inoculated into petri plates and poured with agar.

(7) After incubation at 37° C. for approximately 48 hours, the numbers of colonies appearing on the plates are counted, and the number per ml. of the mixture determined.

(8) The total number surviving in the entire medication tube mixture is computed.

The procedure (designated for convenience the "oleate-agar method") was used in determining the numbers of bacteria surviving 10-minute exposures to five quaternaries, a cresylic disinfectant and phenol.

The results are shown in the Tables 6 and 7.

Quaternaries A, B, and C produced the usual type of survival curves (Tables 6a, b, c, d, e, f), showing a more or less uniform progression to large survival numbers. Quaternaries D and E showed death of the large majority of the cells up to the greatest

(*Turn to Page* 152A)

TABLE 6

Numbers of *E. typhosa* surviving 10-minute exposures to five quaternary and one cresylic disinfectants and phenol at 20° C.

(a)

Quaternary A

*Dilution**	*No. bacteria surviving*
1- 1,000	0
1- 5,000	0
1-10,000	180
1-20,000	100,750
1-30,000	77,616,000
1-40,000	192,000,000

*Dilution of active ingredients

TABLE 6

Numbers of *E. typhosa* surviving 10-minute exposures to five quaternary and one cresylic disinfectants and phenol at 20° C.

(b)

Quaternary B

*Dilution**	*No. bacteria surviving*
1- 2,500	0
1- 5,000	95
1-10,000	98
1-20,000	676
1-30,000	4,435,000
1-40,000	10,980,000

*Dilution of active ingredients

TABLE 6

Numbers of *E. typhosa* surviving 10-minute exposures to five quaternary and one cresylic disinfectants and phenol at 20° C.

(c)

Quaternary C

*Dilution**	*No. bacteria surviving*
1- 2,500	0
1- 5,000	0
1- 7,500	0
1-10,000	(3)**
1-12,500	(2)
1-15,000	164
1-17,500	46
1-20,000	111
1-22,500	1,110
1-25,000	74,300
1-30,000	1,085,000

*Dilution of active ingredients

**Numbers in parenthesis indicate number of colonies appearing on plates containing 1 ml of medication tube mixture.

TABLE 6

Numbers of *E. typhosa* surviving 10-minute exposures to five quaternary and one cresylic disinfectants and phenol at 20° C.

(d)

Quaternary D

*Dilution**	*No. bacteria surviving*
1- 2,500	0
1- 5,000	0
1- 7,500	(2)
1-10,000	0
1-12,500	(2)
1-15,000	0
1-17,500	200
1-20,000	(1)
1-22,500	57
1-25,000	82
1-30,000	280

*Dilution of active ingredients

TABLE 6

Numbers of *E. typhosa* surviving 10-minute exposures to five quaternary and one cresylic disinfectants and phenol at 20° C.

(e)

Quaternary E

*Dilution**	*No. bacteria surviving*
1- 2,500	0
1- 5,000	0
1- 7,500	0
1-10,000	0
1-12,500	0
1-15,000	50
1-17,500	(1)
1-20,000	220
1-22,500	274
1-25,000	56
1-30,000	135

*Dilution of active ingredients

TABLE 6

Numbers of *E. typhosa* surviving 10-minute exposures to five quaternary and one cresylic disinfectants and phenol at 20° C.

(f)

Cresylic

Dilution	*No. bacteria surviving*
1-500	0
1-600	0
1-700	0
1-800	115,500
1-900	Innumerable
1-1,000	Innumerable

Phenol

Dilution	*No. bacteria surviving*
1-70	0
1-80	0
1-90	0
1-100	822
1-110	215,200

TABLE 7

Numbers of *S. aureus* surviving 10-minute exposure to five quaternary, and one cresylic disinfectants and phenol at 20° C.

(a)

Dilution of disinfectant	*Quat. A* Number bacteria surviving	*Quat. B* Number bacteria surviving	*Quat. C* Number bacteria surviving	*Quat. D* Number bacteria surviving	*Quat. E* Number bacteria surviving
1-1,000	0				
1-2,000	1				
1-2,500	95	0			
1-5,000	19	0			0
1-7,500	600	155	0	0	1
1-10,000	1,208	8,100	3,600	0	900
1-12,500			210	0	213
1-15,000			160,000	546	163
1-17,500			471,000	25,000	52
1-20,000				20,000	792
1-22,500					13,500

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ANTISEPTICS and DISINFECTANTS

as formulated for the British market

By Joseph M. Vallance

Part II

IN the first part of this article appearing in last month's issue, Mr. Vallance stated that a study of the more popular and admittedly superior antiseptics found on the British market would serve as an excellent practical guide to developing still more effective preparations along similar lines. The author, leaving for future discussion the question of cation-active quarternary ammonium compounds, has devised a representative classification of the products as follows:

1. *the chlorophenol group,* to which belongs a proprietary line that is probably the best seller of all in the United Kingdom, as well as several popular lines;

2. *the hypochlorites,* containing a well-known, stabilized preparation of typically hypochlorite odor;

3. *the phenol/essential oil/alcohol group,* in which there have been some improvements and a general revival of interest;

4. *pine and other essential oil emulsions;*

5. *hydrogen peroxide solutions;*

6. *coal tar* fluids of the white and black types.

Groups 1. and 2. were discussed in part I of the article.

The logical predecessors of the Group 1 or chlorphenol types of antiseptic were those of the phenol/essential oil/alcohol/water category, which we have collectively styled Group 3. A world-famous antiseptic of American origin belongs to this group.

Just prior to World War II, Spain became the testing ground for an alcoholic antiseptic, which is also typical of Group 3, although its alcohol and phenol contents are both on the high side. Evolved by Major S. Perez-Vasquez, M.D. and his associates of the Hospital de Carabineros, Madrid, it has been fully described in the *Military Surgeon,* official publication of the U. S. Association of Military Surgeons. Briefly, this Spanish wartime antiseptic is composed as follows:

phenol crystals	4 gms.
camphor	3 gms.
thymol crystals	1 gms.
glycerin (double distilled)	10 c.c.
ethyl alcohol 96% to make	100 c.c.

The solid ingredients are triturated together until liquefied, when the glycerin and alcohol are added with thorough stirring.

Dr. Perez-Vasquez considers that this type of antiseptic should have widespread possibilities for peacetime applications, and claims that it was the most satisfactory of all preparations tested for use on war wounds. He writes that, on war wounds of all types, it not only controlled infection with less discomfort to the patient, but also speeded healing and shortened the period of hospitalization. "Even when . . . used several hours after injury, a quick drop in fever is observed, and within four days after beginning treatment, healthy granulation tissue appears. Much less operative surgery is required . . . sterilization is not necessary, and one does not have to worry about excess alkalinity or acidity."

Commenting upon the functions of the ingredients, he points out that ethyl alcohol acts as "an antiseptic, refrigerant and astringent." In his opinion, glycerin has an "osmotic effect which reverses lymph flow of the wound towards the lumen." He declares that "lymphangitis is very rarely observed." Thymol, he adds, is useful in keeping down growth of yeasts and moulds in wounds, "while the analgesic properties of camphor and phenol are well known."

On the subject of ethyl alcohol as a germicide, Professor Garrod (2) apparently agrees with Dr. P. B. Price (7), who found that the optimum concentration of alcohol for this purpose is 70 per cent by weight. Price concludes that the action of alcohol is inherently germicidal and not detergent, and as a stable, non-irritating germicide for skin use he recommends the following simple formula: ethyl alcohol 50 parts, n-propyl alcohol 20, and water 30 parts—all by weight. There is evidently a close relationship between molecular weight, surface tension, solubility and germicidal action, a fact that is borne out by the experiments of U. P. Kokko (8), who found that the germicidal and inhibitory power of alcohols increases with the number of carbon atoms, and that among isomers the order of toxicity for bacteria is: primary>iso>secondary>tertiary. This is well worth noting when formulating new antiseptics, as is also the slight but definite reinforcing action of acetone and diacetone alcohol, when used with phenol and paracresol. (9)

The following general purpose "Healing Antiseptic" for use on skin infections, bites, first degree burns, chilblains, and as a mouthwash and gargle, etc., is also a representative of Group 3, although its comparatively high tannic acid content may not always be considered desirable:

	Parts
tannic acid	5
phenol	0.5
menthol	0.25
glycerin	3
phenyl salicylate	1
alcohol and water, to make	100

Another excellent proprietary antiseptic is said to be based on thyme and eucalyptus oils, baptisia tincture, menthol, methyl salicylate, boric acid, benzoic acid, ethyl alcohol and water. This is a stable, non-toxic, non-irritant and pleasantly acceptable preparation for general domestic use—and may well be compared with the antiseptic solution of the British Pharmacopaeia (*Liquor Thymolis Compositus*):

boric acid	29.03 g.
benzoic acid	1.14
thymol	0.57
menthol	0.38
eucalyptol	1.25 ml.
peppermint oil	0.31
sweet birch oil	0.31
thyme oil	0.31
tincture of baptisia	50.00
alcohol (90%)	250.00
distilled water, to make	1000.00

The boric acid is dissolved in 600 ml. of the water and the benzoic acid in 150 ml. of the alcohol. The essential oils, thymol, menthol and eucalyptol are dissolved in the rest of the alcohol, to which is added the baptisia tincture and about 25 g. of purified talc or kaolin. The latter is agitated vigorously and the acid solutions added gradually with continuous agitation. The mixture is allowed to stand, with occasional agitation for 48 hours. It is then filtered and brought up to volume with distilled water.

We may note, as a link with Group 2, that the addition of 0.5 to 1 per cent of iodine to 70-90 per cent alcohol increases antibacterial action against gram-negative bacteria, according to J. R. Bandeira and L. D. Rodriguez.

PHENOLS and essential oils also find considerable application in emulsified fluids, which may or may not also contain alcohol. An early example is the following semi-official formula (11) for a surgical liquid soap, of the emulsified type.

cottonseed oil	200 g.
coconut oil	100
alcohol (95%)	200 c.c.
water	450
sodium hydroxide	45 g.
potassium carbonate	10
ether	15 c.c.
liquefied phenol	25 c.c.

The procedure involves mixing the alcohol and 100 cc. of the water with the gently heated oils. The alkalies dissolved in 25 cc. of the water are then stirred into the previous batch, and the heat maintained until saponification is complete. The ether and phenol are added on cooling.

Still simpler is the straightforward essential oil emulsion, which in the following formula also contains a proportion of alcohol:

	Pounds
eucalyptus oil (E. Dives)	32
oleic acid, commercial	14
caustic soda solution (25%)	8
alcohol (I.M.S.)	7
water, to make	100

Here the oleic acid is added to the caustic soda solution. Half the water content is then added, followed, when a little cooler, by the eucalyptus oil, then the rest of the water. When the batch is almost cold, the alcohol is stirred in.

Higher-grade emulsified preparations of this Group 4 type merge almost imperceptibly into Group 1, and are characterized by the careful selection of appropriate phenols and essential oils, and of specially selected emulsifying agents, with the end in view of obtaining a safe, effective, pleasantly odorous product of attractively transparent or translucent type. At the other end of the scale are the cruder and cheaper fluids intended for domestic rather than personal applications. These latter fluids, of which many pine disinfectants are typical, have a good deal more in common with Group 6 than Group 1, although they too may be clear dispersions.

Two modern formulae for combined essential oil and phenolic antiseptics, incorporating exceptionally soluble soaps and alcohol to ensure homogeneity, are the following—based, as will be noted, on the highly active benzyl cresol (12):

	Per cent
1. benzyl cresol	3
ti-tree oil	3
lemongrass oil	0.05
triethanolamine	5
ricinoleic acid	5
alcohol (isopropyl)	10
distilled water	73.95

All parts by volume. Described as suitable for personal hygiene etc. pH 8.84. Method of manufacture: Mix the triethanolamine, fatty acid, and a very little water together, with vigorous stirring. Dissolve the benzyl cresol in the alcohol and add the essential oils. Thoroughly mix the second batch with the first and dilute gradually with water. No heat is required, but the mixing must be thorough.

	Per cent
2. benzyl cresol	3
terebene	2
sassafrass oil	1
alcohol (industrial ethyl)	10
potassium hydroxide (10% soln.)	10
ricinoleic acid	6
distilled water	68

All parts by volume. With its pH of 11, described as suitable for household and janitor use. Method of manufacture: Mix the fatty acid and caustic solution, heating and stirring until saponification is complete. Then proceed as before.

Both these fluids are said to possess a Rideal-Walker coefficient of 3.4, compared with the 2.5 of a good grade of lysol. The substitution of parachlormetaxylenol for the benzyl cresol is stated to lower the coefficients of these particular formulae to 1.6, but despite that fact, one very good brand of the Group 1 type contains both benzyl cresol and the p.-chlor m.-xylenol.

TWO problems should here be briefly touched upon. The first is that of selecting the most satisfactory essential oils and/or isolates etc. for the joint functions of acting as a complementary germicide to the phenolic compound, and of imparting a good, clean odor. Without going into a long discussion concerning the difficulties of subjecting essential oils to appropriate test for germicidal activity, or of reconciling differences of opinion in the literature, it is by no means easy to summarize the relative germicidal standings of the more common essential oils. However, I would like to make just a few suggestions (based largely but not entirely on the findings of W. H. Collier and Y. Nitta, who studied the action of 106 essential oils on *streptococci, staphylococci, B. coli* etc.)

Briefly, I would suggest that the following essential oils are deserving of particular attention, as complementary germicides for use in

conjunction with the substituted and halogenated phenols previously mentioned:

Spanish hop oil	(A, B)
lemongrass oil	(A, B)
cinnamon leaf oil	(A, B)
cassia oil	(A, B)
cinnamon oil	(A, B)
pimento oil	(A)
bay oil	(A)
thyme oil	(A, B)
clove oil	(B)
parsley oil	(B)
wintergreen oil	(B)
ti-tree oil	

Of these oils, cassia, cinnamon, thyme, clove and ti-tree would appear to possess the best all-round records to date. Those marked *A* have been found particularly active against *staphylococci* and those marked *B* against *streptococci* (13)—a valuable recommendation. Ti-tree oil was not tested at the time, but for other reasons it deserves inclusion in this list. For those who are scientifically minded, a comparison of the known constituents of these 12 essential oils would not be lacking in interest.

Other aromatic materials of interest in this connection include terpineol, thymol, carvacrol, eugenol, borneol, safrole; and pine and origanum oils. More from the perfuming than the germicidal point of view, one should also mention citronella oil, cade oil (traces only), terpinolene, diphenyl oxide, benzyl acetate etc.

The second of the two problems common to this type of formulation is the choice of a suitable vehicle, and particularly of the emulsifying agent that transforms the vehicle and the active agents into a uniform, homogenous and (at times) transparent emulsion. Some of the best soaps for this purpose are the potash and soda soaps of linseed and castor oil; also the various oleates, and the corresponding fatty acid soaps made with triethanolamine. High-grade sulphonated oils are sometimes very useful, and—for cheaper products—rosin, tall oil and naphthenic acid soaps are employed.

Aqueous solutions of volatile oils may be prepared up to 40 per cent in strength by means of soaps alone. No alcohol is used, and the solutions may be diluted with water to any extent and still remain transparent. (14) When the unusual nature of these essential oil solutions has been grasped, the necessity of a particular procedure for their successful preparation will be conceded. It is, in the first place, of importance to have measure and stirrer both perfectly dry. The essential oil is then mixed very thoroughly with the soap solution of given strength, and it is important that not the slightest trace of essential oil should escape this process; the slightest streak of oil on the side or lip of the measure must be thoroughly incorporated if a dilutable solution is to be obtained. The finished product is usually a slightly viscous, clear amber liquid, which may be diluted with water to any extent without losing its transparency to transmitted light. In most cases it is also transparent to reflected light, even when greatly diluted.

Albert and Wyburn give the following examples of the method described:

Soluble Oil of Eucalyptus

oil of eucalyptus	40.0
strong solution of ammonia	6.5
ammonium ricinoleo-sulphate, to produce	100.0

A light amber fluid similar to glycerin in viscosity. Menthol, terpineol etc. can also be incorporated under suitable conditions. Ti-tree oil may replace eucalyptus. Alternatively the emulsifying agent can be 80 parts of a 20 per cent potassium oleate solution, used with 20 parts of the oil.

Deodorant Solution

THIS refers to the Australian Pharmaceutical Formulary's solution, which consists of oils of thyme, lavender, lemon, and eucalyptus dissolved in 90 per cent alcohol; when diluted with water the oils are precipitated. When the alcohol was substituted by strong solution of ammonia (7.5) and ammonium ricinoleo-sulphate to produce 100 parts, a clear solution was obtained which remained transparent on dilution with water. (The ammonium ricinoleo-sulphate refers, of course, to concentrated turkey red oil, ammonia finish.)

It is of interest to note that rosin, oleic, linoleic and ricinoleic soaps have been found to be the most active of soaps against S. *aureus*. (15)

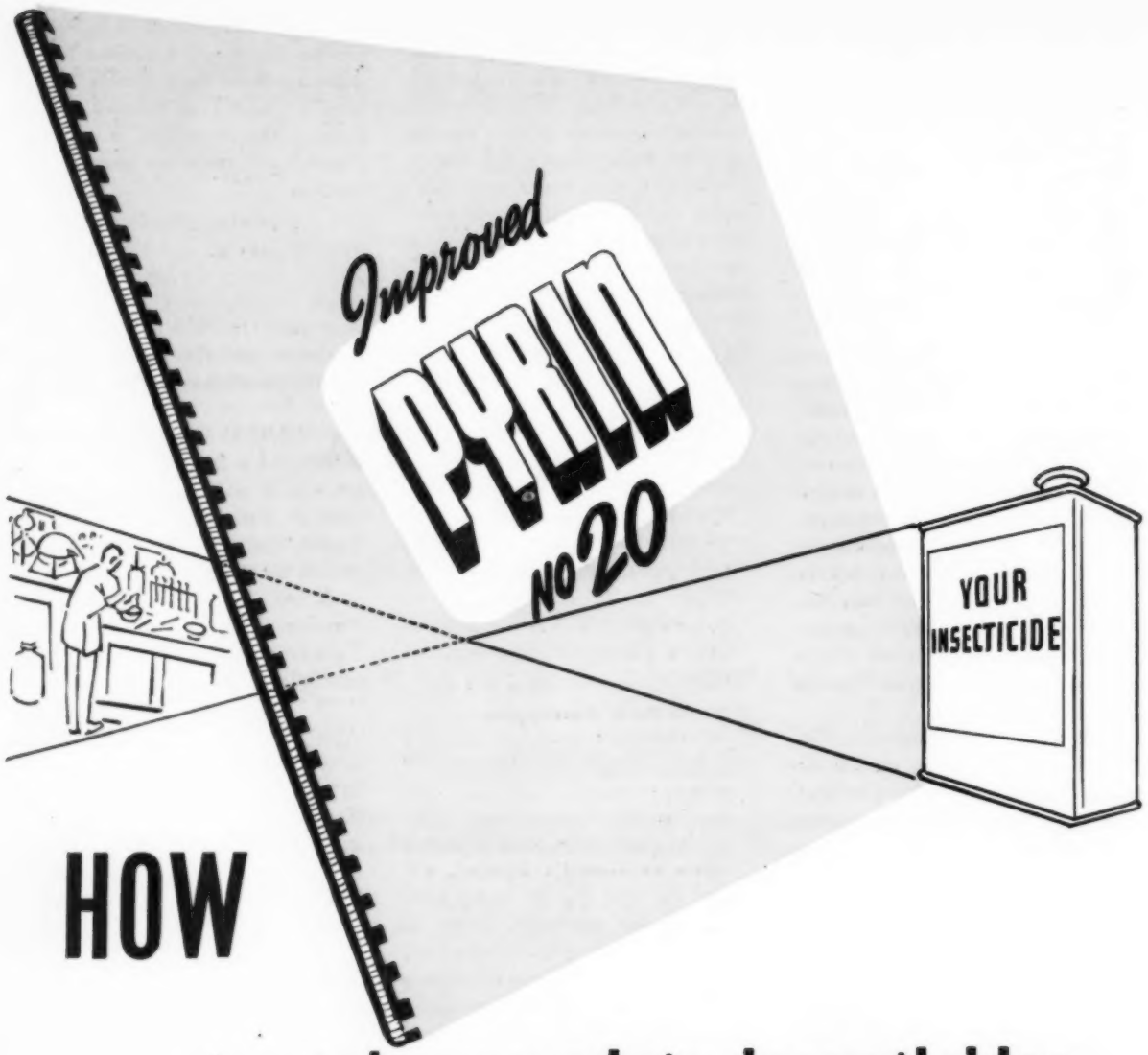
The incorporation of additional wetting agents may sometimes be indicated. Some of these, notably "Aerosol-OT," have been reported to enhance the bactericidal activity of phenol, cresol and other germicides in solution.

Pine oil disinfectants show considerable variation in strength, but in general constitution they are fairly simple formulations of the pine oil/soap/water type, with occasionally sulfonated oils and other alternative emulsifying agents present in place of soap.

A TYPICAL hydrogen peroxide solution is labelled as follows: "A solution of guaranteed purity and strength. Antiseptic, germicidal, disinfectant. Non-toxic, non-corrosive. Excellent for first-aid use, as a mouth wash, and for many other personal and domestic uses." The strength is about 3 per cent by weight of H_2O_2, or what is popularly known as "10 vols."

Everyone is familiar with this type of preparation, packed in brown or dark amber bottles, with adequate room allowed for internal expansion. For those interested in perfuming hydrogen peroxide, it may be worth noting that, while many aromatics are modified by oxidation, certain of the phenolic bodies, etc. are very stable in the presence of peroxide, e.g. anethole, anise oil, eucalyptol, eucalyptus oil and thymol.

This Group 5 can certainly "incommode" a variety of common bacteria, when these are conveniently accessible, as Garrod rather amusingly observes in his excellent survey (2): "Nascent oxygen combines instantly on liberation with almost any organic material within reach, and many bacteria are therefore likely to be spared in any medium rich in protein. This is the principal drawback to the use of such reagents in prophylaxis of infection in wounds. They enjoy some repute for treating infections by anaerobes, and patient application will doubtless incommode such bacteria when they are superficially situated; indolent wounds covered with thin sloughs produced by gram-negative non-sporing anaerobic bacilli—e.g., F. *fusiformis* and "B. *necrophorus*" — should respond to this treatment."



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Other peroxides have not yet attained widespread popularity as household antiseptics, although one would perhaps, at least have expected this of the handy urea-peroxide condensation product that has for some years been available in stable tablet form, containing some 35 per cent H_2O_2 and rapidly dissolving in water.

THE 6th and final group of household antiseptics and disinfectants are those old-established favorites, the coal tar fluids. Even Group I derives from them. As a class, they may be further subdivided into lysol, "white fluids" and "black fluids." Of these, the only officially standardized disinfectant in the U.K. is lysol, the B.P. specification for which calls for 50 per cent cresol B.P. dissolved in a vegetable oil soap. Any vegetable oil may be used, but the cresols must comply with the specification for cresol B.P. (mainly a mixture of ortho, meta and para-cresols.)

For certain purposes, such as the sterilization of surgical instruments the clear solutions formed by lysol in distilled water are probably an advantage. Most experts agree with J. Gibson (16) that, apart from this, lysol has little to recommend it when compared with the better quality black fluids or the more modern chlorinated phenol fluids. Lysol is made from the lowest of the homologues of phenol, which are more toxic and less germicidal than the higher homologues generally used in the black fluids. Lysol itself is a caustic irritant, with a phenol coefficient that rarely exceeds 2.

The tar acids of higher boiling-point are not available in any official preparation but are sold under various proprietary names as exceedingly complex mixtures emulsified with soaps ("black" fluids) or gums ("white" fluids). These substances, of which "Izal" and "Cyllin" are well-known examples, have Rideal - Walker coefficients of up to 20 or more; this much greater apparent bactericidal power is partly but by no means wholly offset by a greater reduction of activity in the presence of organic matter. They do not irritate the average skin in the dilutions required for use, and such information as there is suggests that they are much less poisonous than lysol when swallowed. (2)

Much has been written concerning the formulation of lysol and of black fluids, especially in so far as their soap content is concerned. According to one worker, a 30 per cent castor oil/soda soap solution, when added to an equal volume of cresol, gives a satisfactory lysol. The B.P.C. states: "*Liquor Cresolis Saponatus* (synonymous in the U.K. with Lysol) . . . may be prepared by dissolving 50 per cent v/v of cresol in linseed oil saponified with potassium hydroxide. The 5 per cent v/v aqueous solution shows no opalescence on standing for not less than three hours."

An article on the practical applications of quaternary ammonium products by Jack Varley, Baird & McGuire, Inc., St. Louis, is scheduled for our December issue. Mr. Varley, who is chairman of the disinfectant scientific Committee of the National Association of Insecticide and Disinfectant Manufacturers and a member of its board of governors, will discuss uses of the various types of quaternary products, their stability, and compatibility in formulations and with the materials used in packaging them.

Potassium linseed soap seems to be a popular emulsifier — and is used, for example, in the U.S.P. *Liquor Cresolis Compositus* (cresol 500, raw linseed oil 350, potassium hydroxide 80, water to 1000).

Triethanolamine oleate (cresol 50 parts, oleic acid 24, triethanolamine 14, water 12) has been recommended as giving a fluid of less irritant action. The inclusion of 4 per cent alcohol (I.M.S.) has been advocated in order to achieve homogeneous saponification without external application of heat. In some formulae, up to 6 per cent glycerin is included.

An American formula for a somewhat similar type of fluid has been given by M. L. Griffin, Shell Development Company (17):

	parts
cresylic acid	51
potassium/castor oil soap	38
isopropyl alcohol (anhydrous)	11

Parts by weight. This gives a soluble phenolic type disinfectant, although it goes over to the emulsifiable type if the proportion of cresylic acid is increased. Here we may note that the B.P. lysol calls for the use of cresol with a distillation range of 205°C (90 per cent). 195°C (5 per cent) and 188°C (2 per cent), whereas cresylic acid distils at 205-230°C, mostly at the higher temperature.

A semi-official formula containing glycerin was formerly known as *Liquor Cresolis Saponatus* B.P. Co. The quantities are cresol by weight 50, linseed oil by weight 18, potassium hydroxide 4.25, alcohol by weight 2, glycerin by weight 6, and distilled water by weight to 100 parts. Heat the linseed oil to about 70°C., add potash dissolved in 25 parts distilled water at the same temperature, and mix thoroughly; then add the alcohol with constant stirring and continue the application of heat without stirring until a small portion of the soap is found to dissolve in water without the separation of oily drops, add the glycerin, mix, then add the cresol, and adjust the weight of the product by evaporation, or the addition of distilled water. It is important that distilled water should be employed in making this preparation, in order to prevent the formation of a deposit which must be removed by filtration. Care should also be taken to avoid frothing over during the heating of the linseed oil soap.

In general, marketed fluids of this type contain rather more water and less soap than the official and semi-official formulae would indicate. Blends of castor and other oils, including coconut oil, have been used with success.

Chemists interested in this subject would do well to consult the 1935 paper by Dr. Arthur Cade (18) and those by Paul Wolf (19) and Dr. R. L. Datta (20). Wolf is particularly interesting on the subject of phenolic activities at different pH limits.

Datta found, as a result of his experiments with emulsified creosote disinfectants of the black fluid type, that: "the best results are obtained with a blended soap containing about

(*Turn to Page* 152A)

Propose New Specification for

LIQUID INSECTICIDE

A NEW specification for a liquid insecticide for use against roaches and carpet beetles has been proposed by the Insecticide and Rodenticide Technical Committee, Federal Specifications Board, Bureau of Federal Supply, U. S. Treasury Department, Washington, and was released late in October for circulation throughout the industry. Interested parties in industry are urged to forward comments to R. H. Nelson, member of the committee, at an early date so that the best possible specification can be drawn up prior to circulation to Federal Departments for approval. General requirements, sampling and test procedures are given in detail below. Further information regarding packing and marking and requirements applicable to individual departments as stated in the proposal has been omitted because of space requirements. They may be obtained by writing to Mr. Nelson at the above address.

D. General Requirements.

D-1. The liquid insecticide shall not cause irritation to man nor be poisonous to man when applied in the usual manner in the destruction of common household insects.

D-2. The liquid insecticide shall have no greater detrimental action upon metal or paint (paint, enamel, varnish, lacquer, etc.) surfaces than the "specified" solvent. (See par. F-7a (4).

D-3. The liquid insecticide shall have no objectionable odor.

E. Detail Requirements.

E-1. The liquid insecticide shall be formulated from a petroleum distillate base, free from kerosene odor and practically free from all odor, and shall be clear and free from suspended matter. The active ingredient content of the spray shall be sufficient to meet the requirements of paragraph E-2f when tested in accordance with paragraph F-7.

E-2. The liquid insecticide shall meet the following requirements:

E-2a. Distillation range—
Initial boiling point ....Not below 385° F.
End point...Not above 485° F

E-2b. *Flash point.*—The flash point shall be not less than 125° F. (closed cup).

E-2c. *Residual odor.*—When tested in accordance with paragraph F-4, no residual odor shall be present.

E-2d. *Staining properties.* — Shall meet test specified in paragraph F-5.

E-2e. *Corrosion test.* — Shall meet test specified in paragraph F-6.

E-2f. *Performance.* — The "diluted" liquid insecticide (See par. F-7b (1) shall be equal to the comparison insecticide in average percentage dead and moribund roaches when tested in accordance with the method described in par. F-7.

F. Methods of Sampling, Inspection, and Tests.

F-1. *Sampling.* — A representative sample shall be taken from each delivery and sent to the laboratory for test. The size of the sample shall be not less than 1 gallon nor more than 5 gallons.

F-2. *Distillation range.* — The initial boiling point and the end point shall be determined by method No. 100.15 (distillation of gasoline, naphtha, kerosene, and similar petroleum (products) of Federal Specification VV-L-791. Similar to A.S.T.M. method No. D86-40.

F-3. *Flash point.* — The flash point shall be determined by method 110.12 (flash point of voltaile flammable liquids) of Federal Specification VV-L-791. Similar to A.S.T.M. method No. D56-36.

F-4. *Residual odor.* — Dip strips of No. 40 Whatman-type filter paper of uniform shape and size in the liquid. Remove and allow to dry for 4 hours in a well-ventilated room at a temperature of 70° to 80° F. Examine for residual odor.

F-5. *Staining properties.* — Deposit three drops of the liquid insecticide upon a Whatman-type filter paper. The filter paper shall be so placed as to be clear of an under surface in the area upon which the liquid is placed. Allow the liquid to evaporate at 70° to 80° F. from the paper. On another piece of filter paper, follow out the above procedure using a prepared standard (standard shall be pyrethrum extract containing 400 milligrams of a mixture of pyrethrum flowers in 100 milliliters of "specified" solvent (see par. F-7a(8) instead of the liquid insecticide. Examine and compare filter papers, after a 48-hour drying period, for stains, discoloration, or residue. The liquid insecticide shall show no more discoloration or residue than that shown by the prepared standard.

F-6. *Corrosion test.* — The corrosion test shall be carried out in accordance with method 530.23 (detection of free sulfur and corrosive sulfur compounds in gasoline) of Federal Specification VV-L-791. Similar to A.S.T.M. methods No. D130-30. Liquid insecticide shall be considered as not meeting the requirements of this specification when on examination the exposed copper strip shows more than extremely slight discoloration as compared with the fresh copper strip.

F-7. *Performance.*[1]

F-7a. *Apparatus and test material.*

F-7a(1). *Testing Room.*—This room may be of any convenient size permitting adequate space for the operator to handle the test efficiently. While conducting tests this room shall be maintained at a temperature of 78-82° F. It is suggested that relative humidity be held between 30-50%.

F-7a(2). *Spray Chamber.* — The Spray Chamber shall be a box-like structure of solid material measuring 18" wide, 18" long, and 25" to 30" in height. The bottom of the chamber shall be covered with ½" mesh wire hardware cloth to allow the test spray to pass freely through the floor of the chamber. Suitable guides shall be fastened to the chamber floor to permit the centering of the treatment container directly beneath the nozzle of the spray gun. The top of the chamber shall be open and fitted with suitable brace and mounting for the spray atomizer. The front wall of the chamber may be in the form of a sliding door permitting convenient access to the interior of the chamber. The chamber shall rest on a stand placing it at the proper height for convenient operation of the test. The stand shall be of such construction as not to interfere with the free passage of excess spray from the spray chamber and arranged to avoid eddy currents which might affect the spray cone at the level of the treatment container.

F-7a(3). *Atomizer.* — The atomizer to be employed is the DeVilbiss Special No. 5004, which is the same atomizer specified for the Peet-Grady Test. This atomizer shall be operated with air free of oil, dust particles, or condensed moisture, and maintained at a

[1] "The apparatus, testing material and test procedure are based upon a tentative method developed by the National Association of Insecticide and Disinfectant Manufacturers for testing liquid roach sprays. Copies of a publication "Testing Roach Sprays" giving the method in detail may be obtained from the N.A.I.D.M. at 110 E. 42nd St., New York 17, N. Y. This specification in certain cases does not follow the tentative N.A.I.D.M. method. In such cases, the procedure in the specification shall be used.

constant pressure of 6.0 + or —0.5 lbs./sq. in. The Atomizer when operated at a pressure of 12.5 + or —0.5 lbs./sq. in. shall deliver 12 ccs. of O.T.I. in 24 seconds (tolerance + or —1 second) and this should be checked frequently. The atomizer shall be firmly mounted in a manner to permit adjustment and shall be arranged with the barrel in a vertical position and centered with the nozzle tip 28" above the bottom of the treatment container which rests on the chamber floor. The intake tube of the atomizer shall be bent at a right angle, adjusted with the open end pointing toward the floor and of sufficient length to permit the spray vials to be held in place without interfering with the spray cone.

F-7a(4). *Treatment Container.*—The treatment container shall be a screened bottomed container 3½" in diameter with 3" side walls. 16 mesh wire shall be soldered in place to form the bottom of the container in such a manner that the entire bottom is completely open. Ordinary tin cups of the proper dimensions with handles removed and the solid bottoms replaced by wire screening have been found useful as test containers.

F-7a(5). *Recovery Dishes.* — Glass crystallizing dishes measuring 125 millimeters in diameter and 65 millimeters high shall be employed as recovery cages. The bottoms of the recovery dishes shall be covered with filter paper. 16 mesh wire screen covers may be employed as recovery dish covers during the 48 hour holding period following spray applications in order to prevent the entry of wild roaches.

F-7a(6). *Test Insect.* — The test insect shall be healthy, normal, undeformed adult males of the German roach. *Blattella germanica* (Linn.). Recently emerged adult males, e.g., those whose pigmentation is not dark, shall not be used for testing purposes. In the case of cultures of known age, it is recommended that the adult stage have been attained at least three days prior to testing.

F-7a(7). *Comparison Insecticide.* — The comparison insecticide shall be the current Official Test Insecticide (100 mg. pyrethrins/100 ml. deodorized insecticide base oil) prepared by the National Association of Insecticide and Disinfectant Manufacturers, Inc. each year. The Official Test Insecticide must not be diluted or changed in any manner.

F-7a(8). *"Specified solvent."* — The "specified" solvent shall be a petroleum distillate meeting the following requirements (Note: All tests shall be carried out as indicated under test methods specified in section F).

Appearance—Clear and free from suspended matter.

Color—Not less than plus 25 (Saybolt Chromometer).

Distillation range — Initial boiling point, not less than 385° F. end point, not above 485° F.

Residue from distillation—Neutral.

Corrosion test—Shall meet specified requirements (see par. E-2e).

Flash point—Not less than 125° F. (closed cup).

Odor—Free from kerosene odor and practically free from all odor.

Residual odor—None.

F-7b. *Test Procedure.*

F-7b(1). *"Diluted" Liquid Insecticide.*—Dilute one part, by volume, of the liquid insecticide with three parts, by volume of "specified" solvent. (See par. F-7a(8). Use this "diluted" insecticide in the determination of comparative kill of roaches. (F-7b(2).

F-7b(2). *Testing Procedure.*—Adult male roaches shall be isolated in the recovery dishes or other suitable containers from the mass or aged culture in groups of 20 by means of a suction device or any other suitable method which does not injure them. In selecting the test insects every effort shall be made to obtain uniform test groups. The atomizer shall be in operation throughout the entire application period under the previously described conditions. Prior to application of test samples the gun shall be thoroughly cleaned with a suitable solvent such as acetone and shall be primed with the spray solution to be applied. Spraying of individual test groups shall be effected by bringing an accurately measured amount of the test spray contained in a vial in contact with the atomizer intake tube.

Immediately before spray application the roaches shall be transferred to the screen bottomed treatment containers. These containers shall be free from all traces of insecticides and shall have the entire inner wall surface suitably oiled or greased to prevent the escape of the roaches and to confine them to the container floor. The treatment container shall be centered on the spray chamber floor directly below the atomizer nozzle and the spray applied as described above. Prior to spray application the treatment container shall be agitated sufficiently to distribute the test insects uniformly over the container floor. The treatment container shall be removed from the spray chamber 30 seconds after the start of spray application. The test insects shall be immediately transferred from the treatment container to the recovery dish. The treated roaches shall be held under rearing room conditions throughout the 48 hour observation period and shall receive neither food nor water.

In evaluating a test sample a minimum of 10 individual test groups shall be run for the test spray in conjunction with 10 test groups receiving the comparison insecticide. An equal number of replicates shall be made for members of any given test series on a given test day. The dosage employed shall be the same throughout a given series of tests and of such magnitude to result in an average of 70 percent to 90 percent of the insects dead and moribund at 48 hours with the comparison insecticide. Tests have shown the required dosage to be 0.5 to 0.9 ml.

F-7b(3). *Assembly and Evaluation of Data.* — Evaluation of test samples shall be made on the basis of observations taken 48 hours after spray application, at which time the percentage of test insects normal, moribund, and dead shall be determined. Any insect showing signs of life but incapable of locomotion shall be considered as moribund. (See par. E-2f).

Folder on Carvacrol

Orbis Products Corp., New York, has issued a new folder on "Carvacrol," a liquid phenol with properties similar to thymol, and on "Chlorcarvacrol," a chlorinated derivative of the former product. Carvacrol, 1-methyl 2-hydroxy 4-isopropyl benzene, has uses similar to thymol and cresol but has a pleasanter thyme-like odor. It can be added directly to sulfonated castor oil and textile soaps but requires a solvent or dispersing agent when used with water. It has a phenol coefficient of 25. The newer product, Calorcarvacrol, is a solid, white crystalline granular product relatively insoluble in water, (approx. 1:1000) and is chemically: 1-methyl, 2-hydroxy, 4-isopropyl, 5-chloro benzene. It is said to be considerably less toxic than carbolic acid or thymol because of its lower water solubility.

A.A.E.E. Meets in Chicago

Final plans were nearing completion at press time, for the annual meeting of the American Association of Economic Entomologists, scheduled to be held at the Congress Hotel, Chicago, December 26-30. An insecticide symposium is scheduled for the 27th, in which will be discussed new materials now on the market, those due for marketing in 1948, and products still in the experimental stage.

The A.A.E.E. meeting will be held in conjunction with the American Association for the Advancement of Science.

The Eastern Branch of the American Association of Economic Entomologists was scheduled to hold its annual meeting at the Benjamin Franklin Hotel, Philadelphia, Pa., November 20 and 21.

White to Baird & McGuire

Baird & McGuire, Inc., Holbrook, Mass., recently announced the appointment of William H. White as Pacific coast representative to cover the states of California, Oregon, Washington and Nevada. The new representative was formerly with Wilwite Associates, Oakland, Calif. With inventories on the west coast, the company expects to provide faster service to customers in that area.

TECHNICAL Briefs

From Current Literature in the Sanitary Products Field

Germicidal Cleaners

The germicidal properties of a number of different types of surface-active agents were investigated. They included quaternary ammonium compounds, phosphonium compounds, substituted phenols, alkyl aryl sulfonates, aliphatic sulfonates, aliphatic sulfates, aryl alkyl polyether sulfate and sulfonate, and some other types. The really effective germicides were limited to the quaternary ammonium and phosphonium compounds. Among those moderately effective were substituted phenols, alkyl aryl sulfonates, and aliphatic sulfonates. All of the very effective surface-active agents remained active after 2½ years' storage. Moderately effective agents lost their germicidal properties after the same storage period. Both the quaternary ammonium and the phosphonium compounds were satisfactory with respect to corrosiveness to metals, odor and taste, but the phosphonium compounds were less soluble than the others and formed cloudy solutions. W. S. Mueller, E. Bennett, and J. E. Fuller, *J. Dairy Sci. 29*, 751-60.

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Contact Insecticides

Numerous substances were tested in the laboratory for contact action on lice and their eggs, and on bedbugs. Against louse eggs, Lethane 384 gave LC 50 of 6 per cent, lauryl thiocyanate 18 per cent, bis-ethylxanthogen more than 50 per cent, benzyl benzoate more than 50 per cent, Thanite more than 50 per cent. Against lice and bedbugs respectively, the LC 50 values of the following insecticides were: gamma-hexachlorocyclohexane 0.016, 0.051; pyrethrins 0.47, 0.045; DDT 0.30, 0.56; Lethane 384 (active principle) 1.5, 4.0; Thanite 3.2, 75; bis-ethyl xanthogen 6.2, 75; lauryl thiocyanate 6.0, 19.5; and benzyle benzoate 21, 75. J. R. Busvine, *Ann. Applied Biol. 33*, 271-9.

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Anopheline Larva Control

DDT is a satisfactory routine anopheline mosquito larvicide when used as a dust or in an oil-water emulsion at 15 gallons per acre, or when dispersed in a solution at the rate of 1 gallon per acre as an air-borne mist. High initial toxicity to larvae is ordinarily obtained at an average rate of 0.1 pound DDT per acre whether in a dust, oil-water emulsion, or in oil solution. When compared with a 10 per cent Paris-green dust, a 1 per cent DDT dust gives about the same control on large larvae and a slightly higher rate of reduction of small larvae, used at a rate of 10 pounds per acre.

Either the DDT - oil - water emulsion or the DDT oil mist gives a higher degree of control of all instars considered separately, than does either the Paris-green or DDT dust. The 1-gallon-per-acre DDT oil formula gives a saving of 36 per cent as compared with the DDT dust. Use of the DDT oil-water emulsion requires more time than any other formula used. DDT oil mists used at the rate of 1 gallon per acre are more economical than DDT oil-water emulsions used at 15 gallons per acre, with essentially the same degree of larval control. Air-borne mechanically atomized mists containing DDT and dispersed from air-pressure sprayers are an improvement in larviciding technique. W. V. Mathis, F. F. Ferguson, and S. W. Simmons. U. S. Pub. Health Repts. 62, 95-102 (1947).

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Athlete's Foot Therapy

Many new fungicidal remedies and new prophylactic measures have been advocated as a result of the discovery at the beginning of World War II that a large number of soldiers and industrial workers were found to have Athlete's Foot. At a National Research Council meeting in 1944 the use of sodium caprate rather than of sodium propionate or undecylenate was recommended. Another compound highly recommended was 10 per cent dinitrocyclohexyl phenol, which stops itching immediately. Powders containing fungicidal agents were found to be only slightly more efficacious than ordinary talcum.

Undecylenic acid has been recommended as safe for individuals to use themselves, although not an ideal agent. Gentian violet is two and a half times as effective, 2-chloro-4-phenyl phenol five times, and Brilliant Green twelve and a half times as effective as undecylenic acid. Five per cent of salicylanilide in "Carbowax 1500," and a saturated solution of copper undecylenate in "Carbowax 1500" are also used successfully. The efficacy of ointment bases has been increased by addition of synthetic wetting agents to enable the active agent better to attack the fungi.

Out of the broad war experience has come stress on individual treatment, according to the needs and clinical symptoms of the patient. Inflamed skin caused by fungous infection is now treated with soothing applications, and fungicides are applied only after acute symptoms subside.

Notable among the many new fungicides are propionic and undecylenic acids and their sodium, zinc, and copper salts; chlorophenols, bromocresols, phenyl phenols, phenyl mercuric salts, organic zinc compounds, organic copper compounds such as copper naphthenate and cop-

per pentachlorophenate; and the quaternary ammonium compounds.

The patient is instructed in foot hygiene; he is told to keep the feet dry, especially the interdigital spaces and to remove dead skin manually,—the breeding place of the fungi. Foot baths in public showers, fungicidal mats, sprays, and the fungicidal flooring have been found of no value in preventing athlete's foot. L. Schwartz. *Am. Prof. Pharmacist 13*, 157-61 (1947).

Sanitizing Glasses

Although hot water treatment of beverage glasses may be effective in sanitizing them, it is impractical. Bacterial counts on rims of washed glasses prior to sanitizing varied from 100 to 10,000. Laboratory tests with quaternary ammonium compounds showed that 24 million *Staphylococcus aureus*, and 98 million *Esch. coli* were killed in 5 seconds in dilutions of 100 ppm. The speed of kill compares favorably with that of hypochlorites. Field studies using sodium hypochlorite containing 170 ppm. of available chlorine, showed that within 30 seconds of rinsing and swabbing, the glasses were practically bacteria-free. Five gallons of 170 ppm. chlorine water served to sanitize 700 glasses. With 150 ppm. of quaternary ammonium compounds such as "Roccal," "B.T.C.," and "Hyamine 1622," most glasses were bacteria-free, and all were acceptable according to health department standards.

In all tests a 3-tank system was used. With a 2-tank system and glasses washed in running water without detergent and brushing, and then immediately rinsed in a solution of quaternary ammonium compounds in a dilution of 1 to 6400, some glasses exceeded the bacteria count. One glass with lipstick on the rim contained 20,000 bacteria. Similar tests with the cleaner, "Solvay 600," followed by rinsing in quaternary ammonium compounds at a concentration of 1:6400 showed excellent results. Sodium hypochlorite gave similar results. W. L. Mallmann, *Brewers Digest* 22, No. 2, 51-4 (T19-T22) (1947).

DDT Field Experiments

This study was concerned with the effect on insect populations of DDT treatments of large areas. Results previously obtained showed that control of a natural population of salt marsh mosquitoes up to 5000 feet down wind can be obtained by airplane distribution of a DDT emulsion containing 50 per cent oil, 50 per cent water containing DDT at 10 per cent of the weight of the oil. The dosage was equivalent to 5 pounds of DDT per 1000 feet of front. The area treated was free of mosquitoes for several days owing probably to the low rate of reinfestation rather than to the residual effect of the DDT.

Houseflies were also used in field experiments. They were exposed in cages to DDT applied with an insecticide aerosol generator at distances of 100, 500, and 1000 feet down wind. The diameter of the aerosol particles was 16 millimicrons and the wind velocity 9 miles per hour. It was found that about 15 gallons of emulsion per 1000 feet front were required to control the flies to 1000 feet down wind. Therefore the flies were about 4-6 times more resistant to the DDT aerosol than the mosquitoes.

Controlled and regulated quantities of DDT used against mosquitoes will not seriously disturb insect balance. Quantities of DDT greater than 5 pounds per 1000 feet will endanger it. F. Brescia, V. I. LaMer, I. B. Wilson, J. C. Rowell, and K. C. Hodges. *Entomol. News 62*, 180-3 (1946).

Hypochlorite Mists

Fine mists containing 0.003-0.02 ppm. of available chlorine in hypochlorite solutions usually insure destruction of air-borne bacteriophage. Below a relative humidity of about 50 per cent, the hypochlorite solutions caused a slight or negligible destruction of bacteriophage particles.

A gelatin medium has been found useful for collecting phage particles from the air since it could be liquefied without danger of destruction of the phage after exposure, and a quantitative estimation obtained of the phage particles collected. The gelatin medium for collecting the phage was more satisfactory than sodium lactate, glycerol, or sodium silicate. When the relative humidity was low, recovery of the phage particles from the air was increased. Mists of resorcinol and propylene glycol did not yield satisfactory results in destroying phage under the conditions used. J. Z. Wolf, A. A. Nichols, and P. J. Ineson, *J. Dairy Research 14*, 291-315.

Thioureas as Rodenticides

Toxicity data are presented on "Antu" (*alpha*-naphthyl thiourea) and several related compounds, to both laboratory and wild Norway rats. The thioamide classification in which one complete amino group of the thiourea structure is missing, gave three compounds which killed wild Norway rats in doses of less than 100 mg./kg. These were phenyl thioacetamorpholide, 3-cyclohexene thiocarboxamide, and 1-naphthyl thioacetamide. Two thiazolines also proved to have high toxicity. Of the 196 compounds studied, 19 had LD 50's below 100 mg./kg. for wild Norway rats, while the rest were less toxic. S. H. Duke, G. S. Allen and C. P. Richter, *J. Pharmacology 90*, 260-70 (1947).

Insect Repellent

An insect repellent having a gel-like consistency has the following composition by weight:

	%
Ethyl cellulose	2.7
Cellulose acetobutyrate	2.3
Propylene glycol monostearate	2.0
Dimethyl phthalate	55.8
2-Ethyl hexane-1,3-diol	18.6
Indalone	18.6

This is substantially free from highly volatile solvents. A. Dreyling, to Canadian Industries Ltd. Canadian Patent No. 442,234.

Plant Insecticide

Dried stems of *Anabasis aphylla* are powdered, steeped in water, and treated with plant ash or with soda ash or potash solution. The mixture is dried, powdered, and screened. S. M. Ignat'ev. U.S.S.R. Patent No. 65,768.

Mosquito Repellent Cream

When used in the proper base, pyrethrum is highly effective as a mosquito repellent. A citronella cream containing 28 per cent of oil of citronella in a base of hard and soft paraffin, proved useless as a repellent. Similar results were noted with 1 per cent pyrethrins in the same base.

However, much better protection was obtained, lasting up to 7 hours, when a tragacanth base containing the same percentage of pyrethrins was used. The following formula when shaken with sufficient water to give 200 grams, produces a repellent cream;

Pyrethrum extract, (40% pyrethrins) ...	5 cc.
Alcohol	10 cc.
Tragacanth	6 grams
Glycerine	6 grams

All parts of the skin must be covered with the cream if full protection is to be assured. A cream made with 0.5 per cent pyrethrins gave protection that was only slightly lower than the 1 per cent cream. C. G. Johnson, *J. Trop. Med. 50, 52* (1947).

Air Sterilization

Triethylene glycol vapor as a method of sterilizing air appears to be widely applicable, even if not yet extensively used. During the war, the British, fearful of epidemics arising from crowded air raid shelters, sprayed these havens with hexyl resorcinol in water. Because the water sprays evaporated rapidly, they switched to propylene glycol as a longer-life vehicle. The minimum concentration of resorcinol necessary for air purification was next investigated. First 10 per cent was tried; this was reduced gradually until it reached zero. The spray containing no resorcinol was still a potent germicide. Glycol units also proved effective at several Army barracks and hospitals.

After the war Air Purification Service, Inc., was organized and has installed glycol units in a number of industrial concerns. For example, part of the Metropolitan Life Insurance Company's main office is glycol-treated, part is not, as a control. None of the employees know about the experiment. Merck is utilizing glycol in several processing rooms in its streptomycin plant, since there is much evidence to suggest that such air disinfection is of prime value in minimizing antibiotic contaminations.

The cost of glycol treatment for a 250,000 cubic-foot building is about $100.00 a year. Theaters will probably prove interested, as well as hospitals. In the offing, too, is a home unit which will sell for less than $10.00, and which would require only a few gallons of glycol annually. *Chem. Industries 61*, 207-8 (1947).

DDT from Ground Sprayers

Finely atomized DDT sprays were used against adult mosquitoes. Applications of 30 ml. per acre of a solution containing 20 per cent of DDT were made with a capillary-tube sprayer. A portable power-operated spraying equipment is needed for this purpose. Use of a 40-foot swath reduced the effectiveness of a 20 per cent DDT solution applied with a capillary-tube sprayer at 30 ml. per acre. Such a swath was as effective, however, as a 20-foot swath when 125-250 ml. of solution per acre was applied by a paint sprayer. Part of the action of DDT sprays is furnished by fuel oil or kerosene when present. Comparative tests indicate that hexachlorocyclohexane might prove more effective than DDT in these sprays. A. H. Madden, A. W. Lindquist, and E. F. Knipling. *J. Econ. Entomol. 39*, 463-7 (1946).

Aqueous Insecticide

A new method is described for making a suspension of small particles of solid DDT in a concentrated aqueous solution of a wetting agent, then diluting with water. "Teepol X Liquid" (175 grams), a solution of the sodium salts of the higher alkyl sulfates, is evaporated until it begins to gel; 25 grams of DDT are added, and heating is continued until the gel is melted and has been mixed thoroughly. After cooling, water is added until the total weight is 200 grams. A suitable suspension can be made by mixing with water. E. Shotton, to the Wellcome Foundation Ltd. British Patent No. 583,394.

Evaluation of Germicides

The phenol coefficient test even when modified to give accurate evidence of bactericidal activity remains limited as a method of evaluation. Germicides vary not only with respect to effectiveness in killing bacteria, but also in their toxicity to host tissue, rapidity of germicidal activity, extent of inactivation by organic matter, penetrability, and activity at different temperatures. No single method has been developed to demonstrate effectiveness under various conditions. Therefore a series of different tests, or a "profile" should be made to determine the efficiency of an agent with respect to various desirable characteristics. A. J. Salle and B. W. Catlin, *J. Am. Pharm. Assoc. Sci. Ed. 36*, 129-33 (1947).

Sterilizing Glassware

Glass washing in bars was studied with a view to improving sterilization during the washing operations. Ultimate treatment of the rinse water, which received and disseminated contamination, helped solve the problem. N,N-Dioctyl-N,N-dimethyl ammonium bromide was used as a bactericide. Detergent preparations of this compound fulfilled all the requirements of the single-wash system. Three detergents were studied, the most satisfactory being: soda ash 60, hydrated sodium silicate 20, and the nitrogen compound mentioned, 20 per cent. J. G. Davis and J. C. L. Resuggan, *Proc. Soc. Applied Bact 1946*, 20-5.

Hypochlorite Evaluation

The following technique for assay of hypochlorite disinfectants is more accurate and precise than the usual iodometric method; To a measured volume, in excess, of 0.1. Normal sodium arsenite add a measured volume of the hypochlorite solution, stir, let stand 2-3 minutes, cautiously add 1:10 hydrochloric acid until acid to litmus paper, add a slight excess of sodium bicarbonate and a few cc. of starch solution. Titrate with 0.1 Normal iodine to a blue end point. I. Bellucci, *Chimie & industrie 56*, 228; through *Chem. Abs.*

NEW WEST DISINFECTING CO. PLANT:—This new three-story Chicago plant of West Disinfecting Co., Long Island City, has 40,000 square feet of floor space and costs $300,000. The company took possession of the new plant during October and G. A. Buerki is Chicago plant manager. The plant is located in the central manufacturing district of Chicago on Kedzie Ave.

Riedeburg Joins MGK

Theodore Reideburg resigned his position as sales manager of the agricultural chemicals division of Westvaco Chlorine Products Co., Nov. 1, joining McLaughlin Gormley King Company, Milwaukee, in charge of sales in the eastern district. Mr. Riedeburg will have his temporary headquarters at his home at 63 Walton Avenue, White Plains, but expected shortly to announce the location of a New York office. He had been with Westvaco Chlorine Products Co., since October, 1946 and prior to that connection had been with Dow Chemical Company, Midland, Michigan.

Floor Wax Group Meets

The floor wax and polish group of manufacturers of the New York Paint, Varnish and Lacquer Association announces that it has been holding meetings on the last Tuesday of each month for over a year. It is suggested that those interested in the industry, who come to New York frequently, plan to attend one or more of the regular meetings. During its first year of meetings, the group has concentrated on surveys of the floor wax and polish field, leaving other uses for wax and polish for later development. During this period, the group has cooperated with the asphalt tile and rubber tile manufacturers in making revisions on their requirements for floor waxes and polishes for use on asphalt and rubber tile floors. The group is now meeting at the Hotel Martinique, Broadway and 32nd St., New York.

Pierce Calton Killed

Pierce Calton, 39, Chicago salesman for Velsicol Corp., Chicago, was shot and killed by a hitch-hiker near Nashville, during a recent sales trip through the south. It was a case of murder motivated by robbery, according to Tennessee state police after arresting the assailant who had pulled a gun on Mr. Calton while the car was in motion. He is survived by his wife, Lois, and a son, Pierce, Jr.

New Lehn & Fink Plant

Lehn & Fink Products Co., Bloomfield, N. J., recently opened a new plant at Lincoln, Ill. The new plant started operations officially around November 15th with the manufacture of most of the company's products with the exception of "Lysol." The new plant has 225,000 square feet of floor space and, at the start, is employing about 350 people. Manager of the plant is A. Z. Smith.

Hyman Adds Two

The association of Dr. M. D. Leonard and R. E. Hammon with Julius Hyman and Co., Denver, was recently announced by the company. Dr. Leonard, who is the author of numerous works on truck crop pests and their control, will participate in the technical sales and development activities of the company's eastern sales office in Washington D. C. Dr. Leonard was one of the first full time entomologists officially appointed by the State of New York. His career embraces both governmental and industrial research on insecticides. He served as chief of the division of entomology of the Puerto Rican Agricultural Experiment Station and was special investigator for the New York Fruit Exchange in Spain in 1924. Subsequently he was research entomologist for the Tobacco By-Products & Chemical Corporation and during the war acted as chief of the insecticide unit of OPA.

Mr. Hammon, who will be associated with the technical sales and development staff, received his M. S. degree in entomology from the University of Illinois.

THE FITCH CASE

(*From Page* 41)

dition; and that the first application of the product results in permanently removing all dandruff and thereby curing the abnormal condition.

At the hearing in Washington on November 3 and 4, the Commission faced the task of establishing by the greater weight of the evidence (for the most part expert medical testimony) that its allegations of fact are true and that the Fitch claims are misleading because they are inconsistent with the alleged facts. If Mr. Pencke, the Trial Attorney for the Commission, succeeded in proving these two points, he stands a good chance of having the Commission issue a cease and desist order barring all of the alleged misrepresentations. If he proved less, any order issued by the Commission will be so limited. On the other hand, if the Fitch attorneys succeeded in proving that the alleged facts are not facts at all, but merely unsubstantiated opinions, or that even though the allegations of fact are true, the claims made by Fitch are consistent therewith, the Fitch companies will be entitled to have the FTC complaint dismissed.

The hearing and its outcome, no doubt, will be regarded with real interest by shampoo and scalp preparation manufacturers who have much to gain or lose by the factual precedents established by the Fitch case.

AEROSOL STABILITY

(*From Page* 117)

and Goodhue (3). The results by the two methods are comparable since in Test 12 propylene oxide functions as a satisfactory stabilizer.

The range of compounds tested covers most of the types recognized as corrosion inhibitors in a wide variety of systems. The quantitative corrosion data given in column 4 should not be interpreted too rigorously but they have value for expedient comparison purposes.

Several compounds falling in widely different chemical classes have been found to be satisfactory for preventing corrosion. Salicylal amino guanidine was reported by Gunther and Tow (4) to be an excellent inhibitor for prevention of dehydrochlorination of DDT in the presence of ferric ion. It is shown from Test 6 that it also is an effective stabilizer of aerosol formulations. It is of interest to note that picolinic acid, which is reported by these same workers as a stabilizer, does not function as a very good stabilizer for aerosol formulations as shown in Test 10.

Dodecyl mercaptan, as shown in Test 24, is on a par with salicylal amino guanidine and propylene oxide. Other compounds such as pinene thiophosphite, petroleum sodium sulfonate, and 2-mercaptobenzothiazole all have definite stabilizing effects and may be considered as satisfactory for use in aerosol formulations.

None of the amines, nitro bodies, quinone type compounds, or substituted 2 - mercaptobenzothiazoles is sufficiently effective to do the job.

As a result of this work, forecasts can not be made except by laboratory tests, as to the inhibiting effect of any particular compound. Undoubtedly other effective compounds can be discovered by further testing. An effort has been made in this study to choose compounds representative of all classes known to be inhibitors to corrosion in a wide variety of systems. It is not known what particular function the inhibitor performs in this aerosol formulation. It is for this reason that it is difficult to predict the action of untested compounds.

Conclusions

The stability of DDT - pyrethrum solutions in "Freon" for insecticidal use can be improved by adding 0.001 to 0.1 per cent by weight of propylene oxide, salicyclal amino guanidine, dodecyl mercaptan, pinene thiophosphite, petroleum sodium sulfonate or 2-mercaptothiazole to the formulation. The latter three additives are not as pronounced in their inhibition to corrosion as the first two mentioned. The great dilution in which these additives are used, minimizes any disadvantageous property of the compounds. For example, as Goodhue has mentioned (3), although propylene oxide is flammable and somewhat toxic, the concentration of the inhibitor used is so small as to make these considerations negligible.

The author would like to express his appreciation to Dr. Joseph D. Park and C. J. Pedersen of this laboratory for their advice and assistance.

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QUATERNARIES vs. PHENOLICS

(*From Page* 131)

dilution tested, 1-30,000. In the latter case the numbers of living bacteria per ml of medication tube mixture are so small as almost to ensure irregular results when small quantities are used in sub-culturing. The cresylic disinfectant and phenol, on the other hand, show sharp end-points.

The tests against S. *aureus* showed relatively consistent increases in surviving numbers when the culture was tested against quaternaries, although at 1-15,000 and 1-20,000 dilutions the total surviving cells are but a small fraction of the original inoculum.

(*To Be Concluded*)

TABLE 7

Numbers of *S. aureus* surviving 10-minute exposure to five quaternary, and one cresylic disinfectants and phenol at 20° C.

(b)

Cresylic

Dilution	*No. bacteria surviving*
1-100	0
1-150	0
1-200	(2)
1-250	20,000
1-300	66,000

Phenol

Dilution	*No. bacteria surviving*
1-50	(1)
1-60	(1)
1-70	18,000
1-80	466,000
1-90	3,340,000
1-100	8,570,000

BRITISH GERMICIDES

(*From Page* 139)

50 parts of castor oil, which has special utility in emulsion formation, possibly due to the presence of a hydroxy fatty

acid. . . . Some addition of rosin is important, as it favors emulsion formation at higher dilutions. A percentage of 10 to 15 per cent should be used, for a soap to possess the maximum range of emulsion formation both with respect to water and creosote oil."

A black fluid, incidentally, is one made from creosote oil and phenols, emulsified with soap, the finished disinfectant being usually dark or black in color and indistinguishable in appearance from the creosote oil used in its manufacture. On pouring into water it forms a white emulsion (16). The quality of cresylic creosote, "middle oil" etc. shows considerable variation from source to source. For still higher coefficients, higher boiling tar acids are used (e.g. 90 per cent distilling at 290°C.).

The "white fluid" type of coal tar disinfectant is largely a British specialty, based on creosote oil, cresylic acid and high boiling acids, but differing from lysol and the black fluids, in that it presents a whitish color due to its higher water content and its different type of emulsion state. White fluids are not emulsified with soaps, but with gums, glues, gelatin, casein, dextrin etc., together with minor additions of specialized stabilizers and wetting agents. Thus B.P.565,473 covers the stabilization of this type of product by means of aliphatic and hydroxyaliphatic compounds such as mono- and polyhydric alcohols.

In order to achieve a germicidal activity comparable with that of the less aqueous black fluids, the so-called white preparations are frequently boosted up with higher boiling acids, the creosote being reduced or omitted.

The possibility of using sulfated fatty alcohols, sulfonated oils and other modern surface-active agents, polymers and gum substitutes etc., in place of the more conventional soaps and glues, is deserving of every consideration—but the relative value based on comparisons of performance with cost is, of course, apt to be the deciding factor.

I have tried, in the scope of this article, to give a reasonably clear picture of the classification and constitution of household antiseptics and disinfectants, as actually marketed at the present time in the U. K. With this in view, I have been forced to omit references to germicidal dyes (which are chiefly found in the home in the form of anti-burn jelly or ointment) and also to the as yet unfulfilled promise of cationic agents such as the quaternary ammonium salts. Likewise, I have not referred to sulphonamides, mercurials, penicillin and so forth, nor to specialized bactericidal or bacteriostatic preparations, such as mouth washes, inhalants, room sprays, disinfectant and sanitary powders, solid disinfectant tablets, etc.

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(*For the first portion of the bibliography see October Issue, Page 161*)

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MILDEW PREVENTIVES

(*from Page 123*)

utes in a bath of 0.5 per cent soap solution and then into a second bath of 1 per cent cadmium chloride or copper sulfate solution for 30 minutes. The cadmium soap thus formed is colorless, while the copper soap is blue. A very similar procedure has been recommended by the Bureau of Home Economics for mildew-proofing shower curtains. (29) This Governmental agency has developed other readily-applied anti-mildew treatments, (30) and is the source of considerable data on such processes. (15)

Another mildew-proofing composition that is quite easy to prepare is detailed in one of the newer reference texts. (31) The concentrated solution is made from:

Copper naphthenate	9 lb.
Zinc bromide	5 lb.
Amyl acetate	1 lb.
Water	20 gal.

Mix and dissolve thoroughly and then filter. To make the working solution, mix 1 part of the above concentrate with 200 parts of water. Soak the fabric in the solution for five minutes and dry.

THE problem of mildew on leather has also been the subject of investigation during recent years. (32) Considerable data has been assembled with regard to suitable fungicides and the best methods for using these compounds. (33, 34, 35) Leather products are very susceptible to mildew attack. Studies (36) at the National Bureau of Standards revealed that leathers on which mildew growth occurred showed increased stiffness, crackiness of grain, and decreased tensile strength and stretch. Vegetable tanned leather showed greater susceptibility to mold growth than chrome tanned leather.

For mildew proofing leather during manufacture, the fungicides may be added to the late tan liquors, in a special dip, in the fat-liquoring oils or in the stuffing grease. Finished leather may also be sprayed with alcoholic solutions of fungicides. (37) Leather may also be protected by grease dubbings or polishes containing suitable anti-mildew agents.

A number of agents have been found satisfactory for use in solutions. (35) For example, an alcoholic solution of 0.5 per cent of salicylanilide, paranitrophenol or dihydroxydichloro-diphenylmethane was found to provide adequate protection against mildew. Where the leather remains in prolonged contact with the body, the preferred agent is dihydroxy-dichlorodiphenylmethane. A suitable solution is readily prepared by dissolving one-half ounce of the compound in one gallon of isopropyl alcohol.

Because they contain greases and oils which are themselves subject to mold attack, grease dubbings to re-

pel water from leather must contain a fairly high proportion of fungicide. The studies of Greene and Lollar (38) showed that the addition of 2.4 per cent of an effective fungicide to the regular Army dubbing formula would provide effective anti-mildew action. However, they found that a combination of three fungicides would provide better protection against a wider range of molds than only one agent. They therefore recommended the use of 0.8 per cent each of para-nitrophenol, para-chloro-meta-xylenol, and tetrachlorophenol. This combination was added to the following formula, replacing an equal quantity of beef tallow:

	Per cent
Beef tallow	50
Neatsfoot oil	40
Mineral wax	9
Aluminum stearate	1

Another anti-mildew dubbing formula developed at the National Bureau of Standards consists of:

	Per cent
Paraffin wax	20
Stoddard solvent	68
Cyclohexanol	10
Dihydroxy-dichloro-diphenylmethane	2

Anti-mildew agents can also be effectively incorporated in both wax and liquid shoe polishes. The addition of 2 per cent of dichloro-dihydroxy-diphenylmethane is recommended. (2)

Other formulas for preparations to protect finished leather goods against mildew are provided in one manufacturer's technical data sheet. Applicable by dipping, brushing or spraying, the solutions consist of salicylanilide in suitable solvents containing wax or mineral oil for lubrication and water resistance. Typical formulas are:

	I	II	III
Salicylanilide (Shirlan, Extra)	2	2	3
Hexalin cyclohexanol)	20	..	60
Isopropyl alcohol	..	25	..
Refined paraffin wax	20	20	..
Mineral oil	..	..	5
Stoddard solvent	58	53	32

Simple but well-recommended (39) is a product for preventing mildew on leather book bindings. This consists of a soft cloth immersed in a solution of 2 to 5 per cent of copper sulfate. After wringing and drying, it is used to rub the book bindings.

Mildew on book covers is not limited to leather bindings. That is why libraries often shellac all book covers to prevent mildew damage. More effective action may be obtained by incorporating a suitable fungicide, such as salicylanilide or dihydroxy-dichloro-diphenylmethane, in a book preservative shellac, like the following: (2)

White shellac	2 lb.
Alcohol	1 gal.
Fungicide	1½ oz.

Another varnish to protect books and other items from mildew in warm and humid climates is prepared from: (40)

Castor oil	56.0 cc.
Ethyl alcohol	840.0 cc.
Turpentine	105.0 cc.
Shellac	217.0 Gm.
Mercury bichloride	2.1 Gm.

Dissolve the finely ground shellac in about 500 cc. of alcohol. Add the castor oil dissolved in the turpentine. Allow to stand overnight and filter. To the filtrate add the camphor and mercury salt dissolved in the remainder of the alcohol. Apply on a dry day.

The field of mildew control, especially with regard to consumer products, is a fairly young one. It is a field in which new and interesting developments are appearing. Such developments are well worth watching, especially since the public is becoming increasingly aware of the advantages of preventing mildew and related damage.

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Products Referred To

A. Nuodex Products Co., Elizabeth, N. J.
B. Rohm & Haas Co., 222 Washington Square, Philadelphia 5, Pa.
C. Interchemical Corp., Fair Lawn, N. J.
D. E. I. Du Pont de Nemours & Co., Wilmington 98, Del.
E. Givaudan-Delawanna, Inc., 330 West 42 Street, New York 18, N.Y.
F. General Dyestuff Corp., 435 Hudson Street, New York, N. Y.

TRADE NEWS . . .

Harvey Seil Retires

Seil, Putt and Rusby, Inc., New York, announced Oct. 20th the retirement of Dr. Harvey A. Seil from active work with the firm. Dr. Seil will continue, however, as a consultant. Earl B. Putt, founder, with Dr. Seil, of the firm, will continue the business without changes.

Chas. McCormick Honored

Charles P. McCormick, president, McCormick & Co., Baltimore, recently received the annual national Human Relations Award from the Society for the Advancement of Management at a dinner meeting of the Society's fall conference on human relations, held in Cincinnati. The award was for his contribution to the promotion of human relations in the field of industry and business through the development of the company's "multiple management" system.

NSSA West Coast Meeting

The second western regional meeting of the National Sanitary Supply Association, Chicago, is being held November 12th and 13th at the Roosevelt Hotel, Hollywood, Calif. Business problems are to be discussed by members of the industry in open type meetings but details of the program have not yet been announced. Entertainment will feature a cocktail party and banquet on the evening of the second day.

Chicago Chem Show Date

The date for the fifth National chemical exposition by the Chicago section of the American Chemical Society has been set for October 12 through 16, 1948 The exposition will be held at the Chicago Coliseum.

NSSA New York Meeting

The eastern regional meeting of the National Sanitary Supply Association will be held in New York, December 4th and 5th, 1947, at the Park Central Hotel. Jack Gantz, Empire Brush Works, Inc., Port Chester, N. Y., is general chairman of the meeting and is assisted by Martin Peters, Moore Brothers Co., New York; Lester Brown, I. Edward Brown Co., New York; M. B. Herman, Astor Supply Co., New York; Ely Benenson, Majestic Can Co., Brooklyn; Jess Keppler, Keppler Brothers, New York; and Jack Kahn, Windsor Wax Co., Hoboken, N. J.

JACK GANTZ

N.Y. Building Supply Expo.

The first annual Building Maintenance Supplies Exposition opened October 27 for a six day period at Grand Central Palace, New York. The show, featuring exhibition booths of over 70 manufacturers, distributors, and jobbers of building sanitation and maintenance products, was attended by purchasing agents, property owners, building superintendents, and allied members of the real estate industry in New York and the surrounding area. It was the first of its kind to be held.

Among the exhibitors were the Continental Car-Na-Var Corp., Brazil, Indiana, who demonstrated their line of floor waxes, cleaners, polishing and scrubbing machines; West Disinfecting Co., Long Island City, N. Y., manufacturers of sanitation and pest control materials; and the Florshield Products Corp., Newark, N. J., who displayed floor coating and disinfecting products. The A. C. Horn Co., Inc., Long Island City, N. Y., demonstrated its floor treatment material. The company is currently celebrating its 50th anniversary.

Other exhibitors were: Atlas Floor Surfacing Machinery Corp., New York; Camp Chemical Co., Brooklyn; Industrial Wiping Cloth Co., Long Island City, N. Y.; Kusiel Chemical Co., New York; Manhattan Floor Supply, New York; Masury-Young Co., Boston; Merel Wiping Material Co., New York; O. D. Chemical Corp., New York; Ponsell Floor Machine Co., New York; and Unity Sanitary Supply Co., New York.

Sanitary Soap Expands

In line with its expansion program, Sanitary Soap Co., Paterson, N. J., recently announced the acquisition of the soap plant and facilities of W. A. Woodbury Co., Brooklyn, for the manufacture of a line of toilet soaps, laundry soaps, fatty acids and glycerine. Paul R. Yankner, general manager of Sanitary Soap Co. has further announced that the entire Woodbury plant is being moved to a recently purchased four acre tract in the Paterson area. The plant had formerly been used for the manufacture of toilet soaps, floating soaps, and laundry bar soaps.

New Mobile Sprayer

A new sprayer with free wheeling action was recently announced by Universal Metal Products Co., Saranac, Mich. The new sprayer, known as "Mobl-Spra" consists of a steel, three and one-half gallon tank and positive action brass ball valve pump mounted on an all steel truck with rubber-tired wheels. Over-all height is 40 inches. The sprayer is equipped with a detachable nozzle and an 18-inch extension rod, five feet of spray hose of heavy molded rubber equipped with an extra spraying disc.

State Chem. Adds To Plant

State Chemical Mfg. Co., is building another addition to its Cleveland, O., plant, J. H. Zucker, company head, announced.

N.A.I.D.M. To Meet December 1-3

THE 34th annual meeting of the National Association of Insecticide & Disinfectant Manufacturers will be held in Baltimore, Maryland, December 1, 2, & 3 at the Lord Baltimore Hotel. This will be the first time in its history that the Association has met in Baltimore and a distinct departure from previous years when the annual meeting has normally been held in New York City. This year's meeting will extend for three days, with morning and afternoon sesisons on the first and third day, and a morning session only on the second day—leaving the afternoon of this day free for committee meetings. Group luncheons will be held on each of the three days, with an annual cocktail party and informal dinner scheduled for the evening of December 3rd. Registration fee for the entire meeting will be $25.

Melvin Fuld of Fuld Brothers, Baltimore, acting as chairman of the program committee, has announced a tentative schedule of speakers in which there still may be several changes before the time of the meeting. The new Federal Insecticide Law which has recently gone into effect will come in for special attention. Dr. W. G. Reed, Director of the Insecticide Division of the U. S. D. A. will discuss the new law as well as the regulations for its enforcement recently issued by the Dept. of Agriculture. "Regulation Procedure under the New Insecticide Act" is to be the subject of the talk by Stanford Hill of E. I. du Pont de Nemours & Co. Other speakers on governmental topics will include J. A. Van Swearingen of the U. S. Bureau of Census, who will talk on "The Contribution of the Census of Manufacturers to the Insecticide Industry." John D. Conner, Washington representative of the NAIDM will discuss "The Federal Trade Commission's Place In Your Business," while James L. Kelly of the U. S. Dept. of Commerce will speak on "What the Office of Small Business Can do for your Business."

Carter Parkinson of McCormick & Co., Baltimore, will lead a symposium on what should prove to be a very live topic in view of the sales trend in the insecticide industry over the past year—"What has happened to the Insecticide Business?" Another convention talk connected with sales will be an address by William Dugdale of Van Sant Dugdale & Co., Baltimore advertising agency, "Looking Ahead at Selling."

"What the Distributor of Sanitary Chemicals Expects from the Manufacturer" will be discussed by Mitchell Rosenfeld of United Sanitary Chemical Co., Baltimore. "Potash Soaps in Floor Maintenance" will be the topic of Dr. E. G. Thomssen of Winona, Minn. J. N. Borgin of Hercules Powder Co., will speak on "Naval Stores Chemicals used in the Insecticide & Disinfectant Business." Another very live program subject in the light of the current emphasis on cleaning up public eating places will be a talk by Ferdinand A. Koff, Director of Bureau of Food Control, Baltimore City Health Dept. Mr. Koff will discuss, "Sanitation in Eating Places."

On the technical side, Dr. James A. Munch of the U. S. Fish & Wildlife Service will discuss "Antu II—The Lethal Dose." Dr. C. W. Kearns of the University of Illinois will speak on "Insecticidal Effect of Residually Active Compounds on the House Fly." Dr. S. S. Block of the University of Florida will report on "Two Years Exposure Tests on Preservation of Treated Fabrics," and will also discuss "Insecticidal Surface Coatings." Harry Fleischer of the Purchasing Division of the U. S. Navy Dept. will speak on "Performance Standards in Government Specifications." Adrian DuBois & Harry Broll of Fuld Brothers are to report on "End Use Laboratory Testing of Sanitary Chemicals."

In addition to the scheduled addresses, there will also be three clinics providing for open floor discussions of insecticides, disinfectants, and sanitary products.

Advance registration for the meeting will start on Sunday afternoon, November 30th, and a regular meeting of the Board of Governors will be held that evening.

N. J. GOTHARD
N.A.I.D.M. president

MELVIN FULD
in charge of program

LESTER JONES
entertainment chairman

Economic Poisons Officials Meet

GOVERNMENTAL and state economic poisons officials met jointly with industry representatives October 19, at the first annual gathering of the newly formed Association of Economic Poisons Control Officials held at the Shoreham Hotel, Washington. Dr. J. L. St. John, chairman of the division of chemistry and state chemist, Pullman, Washington, was re-elected president of the association. Seventy-two persons from 28 states were registered at the all-day session. In addition to Dr. St. John's re-election, H. J. Hoffman, chief chemist, Minnesota State Department of Agriculture, Dairy and Food, St. Paul, was named vice-president. The new secretary-treasurer is A. B. Heagy, chemist, Maryland Inspection Service, College Park, Md. Mr. Heagy succeeds Allen B. Lemmon, chief of the Bureau of Chemistry, California Dept. Agriculture, who was named to the executive committee.

New officers of the Association of Economic Poisons Control Officials are: (left to right) A. B. Heagy, Chemist, Maryland Inspection Service, College Park, Md., secretary-treasurer; Dr. J. L. St. John, Chairman of the Division of Chemistry and State Chemist, Pullman, Washington, president; and H. J. Hoffman, Chief Chemist, Minnesota State Dept. of Agriculture, Dairy and Food, St. Paul, vice-president.

The program opened with an address of welcome by Dr. P. N. Annand, chief, Bureau of Entomology and Plant Quarantine, USDA. He pointed out that increasing complexity in the economic poisons field makes necessary a close familiarity with the new Insecticide Act of 1947. The picture of serious crop losses caused by improper use of chemical materials during the past season may become enlarged during 1948. Marketing temptations must await adequate research on new products, he said.

Dr. W. G. Reed, chief, Insecticide Division, U.S.D.A. presented a paper comparing the new Federal Act with the Insecticide Act of 1910. He stated that the latter was now inadequate due to the introduction of many complex products and their attendant problems. He explained the "registration under protest" clause and stated that no agency has all the accumulated knowledge necessary to pass on the merits of all products being developed, and that the manufacturer must therefore assume proper responsibility. He also discussed labeling and the problems connected with ingredient statements.

Lea S. Hitchner, executive secretary of the Agricultural Insecticide and Fungicide Association, New York, discussing the mutual responsibilities of enforcement officials and the industry, stressed cooperation and "a full and frank interchange of views". H. W. Hamilton, secretary of the National Association of Insecticide and Disinfectant Manufacturers, also spoke, the complete text of his address appearing elsewhere in this issue.

In an open discussion on several topics, S. A. Rohwer, Bureau of Entomology and Plant Quarantine, USDA, pointed out a need for definite information regarding the active ingredients on labels. He urged the industry to capitalize on significant names and warned against the use of a confusing array of extra names which have nothing to do with the real formula.

During the luncheon session, four pioneers of the economic poisons law enforcement field were honored by the group. These included Dr. C. C. McDonnell, formerly of the USDA; Dr. Alvin J. Cox, formerly chief of the California State Bureau of Chemistry; Dr. H. L. Griffin, and Dr. J. J. T. Graham, USDA. They were introduced to the group by Allen B. Lemmon, and each of the four spoke briefly in acknowledgement.

At the afternoon session, Dr. Henry A. Lepper, secretary, Association of Official Agricultural Chemists, discussed the cooperation of his association with the new group and Dr. E. W. Constable, state chemist, North Carolina State Department of Agriculture discussed the Uniform State Insecticide Bill. Dr. W. G. Reed spoke on Federal-State cooperation and Dr. R. C. Roark, USDA, presented the final paper of the day on new organic insecticides.

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Rothwell Joins Park Chem.

T. B. Rothwell, formerly production manager for the Strassenburg Company, Rochester, N. Y., has taken a similar position with the Park Chemical Co., Detroit. Park Chemical manufactures sanitation chemical specialties and automobile and aircraft maintenance chemical products.

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Opens in New Orleans

Commercial Solvents Corporation, New York, has announced the opening of a new district office in the Baronne Building, New Orleans. John Owen, who has for many years handled the sale of C. S. C. products in the New Orleans area, has been appointed district manager.

N.S.S.A. Atlanta Meeting

THE National Sanitary Supply Association's southern regional meeting at the Atlanta Biltmore Hotel, Atlanta, Ga., Oct. 9 and 10, brought together some 150 members of the organization for a helpful, two-day discussion of industry problems, centered chiefly on the selling of sanitation materials and equipment.

Joseph Fuld, of Fuld Bros., Baltimore, in presenting some "Selling Tips on Disinfectants," advised his hearers to become thoroughly familiar with the new federal insecticide act. Every disinfectant, insecticide, rodenticide and herbicide sold in interstate trade will have to be registered with the federal government, he warned, and will have to conform in formulation and labeling with federal regulations. Advertising, he predicted, will be scanned more closely by the Federal Trade Commission, adding "My advice to you is to get an expert to make sure that your advertising and labeling comply with the law."

There are now 26 states requiring registration of economic poisons, Mr. Fuld reported, and with federal registration now required, the number of registrations is becoming burdensome. "It is an extremely costly operation," continued Mr. Fuld, "and requires the re-filing of each application yearly. Fortunately, at the present time, there is in formation a new American Association of State Economic Poison Control Officials. It is to be hoped that, in the interest of uniformity this association will find it feasible to support nation-wide establishment of the fundamentals involved, so that each state will have uniform registration and that yearly registrations will be merely a statement that the products will remain the same. That will save us a lot of trouble."

Marshall L. Magee, vice-president of T. F. Washburn Co., Chicago, in his talk on "Selling Self Polishing Waxes," stressed the importance of a thorough knowledge of the product. Mr. Magee outlined a practical test for determining comparative quality of competitive waxes and related an experience with a complaint where it was eventually demonstrated that the trouble lay, not in the wax, but in the condition of the floor. "Don't complain to your manufacturer until you know definitely that the product is wrong," he continued. "Manufacturers will cooperate with you better, be more loyal and helpful, if you eliminate unjustified complaints."

John H. Lawson, vice-president of Federal Varnish division of Enterprise Paint Mfg. Co., Chicago, in another talk on "Selling Floor Finishes," suggested the idea of selling the customer on a system of preparing, finishing and cleaning floors, rather than just trying to sell the buyer individual items. "If you sell a man on the idea that your cleaning materials will clean the surface properly, so that it can be finished with your finishing materials and produce a finish that will protect and stand up under unusual traffic, and then sell him on the idea that your product and your system of maintenance will further protect his investment, you have established a customer who will not be thinking all the time about the cost of anyone item, but who will be sold on the argument that it is a combination of your products and system that gives him satisfaction."

Discussing the prospects for sales of dishwashing compounds, John F. Walsh, vice-president of Tesco Chemicals, Inc., Atlanta, declared that many sanitary supply distributors have a mistaken idea that the normal mark-up on dishwashing compounds makes sale of these products unprofitable. "This is only true on a unit sale basis," said Mr. Walsh. "If we, as an industry can guide our sales efforts correctly in that field, the turnover involved will eventually prove that dishwashing compounds are profitable. A well established dishwashing compound business is very stable, because the product is being consumed by a basic essential service industry."

Users think of dishwashing compounds as soaps and rate them for their ability to produce suds, said Mr. Walsh, in discussing another phase of his subject. "But too many formulas spend the money to produce a desirable suds and then finish with fillers that do not contribute to the performance of the product. Such inconsistent formulation is often found when the product is sold on the brilliant suds performance of the synthetic detergent. If you have been guilty of this error, your product will not perform satisfactorily. Be sure that you have enough detergent power in your dishwashing compound to do a good cleaning job against animal fat, vegetable oil, protein, albumen and combinations of these types of soil. Also be sure that your directions for use are specific."

David Kreekun, of Standard Chemical Co., St. Louis, Mo., spoke on "Sales Tips On Floor Machines." Now that labor is 50 per cent more expensive and 75 per cent less efficient than before the war, he declared, mechanization of maintenance departments is more important than ever. "Proper tools placed in the hands of an employee will help do a better job, and mechanical equipment will allow the customer to get the most out of his materials. Last, but not least, we are protecting and prolonging the life of his floor covering investment."

Howard C. Young, of Davies-Young Soap Co., Dayton, O., rounded out the symposium with a discussion of the need for proper demonstrations in selling floor cleaners.

Leo J. Kelly, executive vice-president of NSSA, opened the first day's session with a report on the organization's national advertising and public relations program and also outlined other future activities now being studied by the Board of Directors.

Erwin Zaban of Zep Mfg. Co., Atlanta, and southern regional vice-president of NSSA, was in general charge of the meeting and John F. Walsh of Tesco Chemicals, was chairman of the various sessions. Committees, with their chairmen and members, all from Atlanta, were as follows.

Program — John Nelson, Momar, Inc., chairman; Wm. Fawcett, Guardian Chemical Co.; Frank de Peterse, Jr., Tesco Chemicals, Inc.;

STATEMENT OF OWNERSHIP

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946, of Soap & Sanitary Chemicals, published monthly at New York, N. Y., for October 1, 1947.

State of New York, County of New York.

Before me, a Notary Public in and for the State and County aforesaid personally appeared Ira P. MacNair, who, having been duly sworn according to law, deposes and says that he is the Publisher of Soap & Sanitary Chemicals and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, MacNair-Dorland Company, Inc., 254 W. 31st St., N. Y. 1; Editor-in-Chief, Ira P. MacNair, 254 W. 31st St., N. Y. 1; Editor, Wayne E. Dorland; Business Manager, Thomas Morgan, 254 W. 31st St., N. Y. 1.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

MacNair-Dorland Co. Inc., 254 W. 31st St., N. Y. C.; Ira P. MacNair, 254 W. 31st St., N. Y. 1; Grant A. Dorland, Russell Cave Pike, Lexington, Ky.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustee, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the months preceding the date shown above is ——. (This information is required from daily publications only.)

IRA P. MacNAIR, Publisher.

Sworn to and subscribed before me this 3rd day of October, 1947.

HARRIET LEVINE, Notary Public.

Bronx County Clerk's No. 56. New York County Clerk's No. 624.
Commission Expires March 30, 1948.

Leon Sayer, Aladdin, Inc.; Kirk Dornbush, Aladdin, Inc.; Lee L. Baker, Tesco Chemicals, Inc.

Entertainment — Sam Mohr, Momar, Inc., chairman; Ralph Hillman, Hill Mfg. Co.; co-chairman; Jack Wallen, Aladdin, Inc.; Arthur Hillman, Hill Mfg. Co.; Charles Brown, Fickett-Brown Mfg. Co.; Larry Martin, Floors, Inc.

Arrangements — Ralph C. Richards, Tesco Chemicals, Inc., chairman; John Nance, Sanitary Supply Co.; Nathan Levy, Southern Sanitary Supply Co.; Dozier Willard, Tesco Chemicals, Inc.

D & O Sales Meeting

A five-day sales conference was held by Dodge & Olcott Inc., New York, September 22-26, which brought salesmen up to date on new findings, methods and techniques. The conference was in the nature of a sales clinic and refresher course, three days being devoted to analysis of production and purchasing problems which currently confront the customer, and another day was devoted to the inspection of the company's Bayonne plant for milling and extracting insecticide materials. A day was spent examining and reviewing experiments demonstrating the effectiveness of pyrenones at the Dodge & Olcott Entomological Laboratories, Fairfield, Md.

Announce New Quaternary

A new quaternary ammonium derivative effective as a germ killer and detergent for washing machine use was announced by Drs. J. C. L. Resuggan and J. G. Davis, British chemists, in a report to the Eleventh International Congress held last month in London. Quaternary ammonium compounds formed of long chains of 12 to 18 carbon atoms have been known in the past to be good detergents and disinfectants but they build up so much foam that it interferes with the operation of washing machines. According to Drs. Resuggan and Davis, by substituting two shorter chains for the single long chain in the compound, the ability to form stable forms in all but relatively high concentrations is destroyed, while when suitable chains are used, the compound has considerable bactericidal and wetting powers.

Urge Pest Control Program

A program destined to increase production of corn and small grains by nearly 200,000,000 bushels during the coming year by more effective chemical pest control on the farm and in storage was outlined in a telegram sent to President Truman, October 10th by Lea S. Hitchner, executive secretary, Agricultural Insecticide and Fungicide Association, New York. Mr. Hitchner also stated that meat products could be greatly increased by more effective control of livestock pests.

Mueller Article Corrected

Corrected reprints are now available for the article "Testing Quaternary Ammonium Sanitizers as used in the Dairy Industry" by W. S. Mueller, D. B. Seeley and E. P. Larkin, Univ. of Mass. Several paragraphs of the article were printed in an incorrect order during publication of the September issue.

"Rodalon-10 Per Cent," a new liquid germicide being introduced to the hotel, restaurant, hospital, institutional, and dairy trade by Fairchild Laboratories, Plainfield, N. J., is said to have a phenol-coefficient of 40 at 20°C. It is a dimethyl ammonium chloride salt derived from the fatty acids of cocoanut oil, and is said to be particularly effective when used in a slightly acid medium. It may be buffered with small amounts of trisodium phosphate and is compatible with cationic and non-ionic detergents.

Natl. Labs. in New Plant

National Laboratories, Inc., Toledo, O., has purchased a new plant, containing 30,000 sq. ft. of floor space at 4934 Lewis Ave., Toledo. The company manufactures an all-purpose cleaner and a liquid toilet bowl cleaner.

Octa-Klor Prices Reduced

Julius Hyman & Company, Denver, has announced a reduction in prices effective October 1st for "Octa-Klor" brand chlordane insect toxicant. The company reports a price reduction of $0.25 per pound for agricultural grade and $0.35 per pound for refined grade chlordane in carload quantities, and $0.30 per pound for agricultural grade and $0.40 per pound for refined grade chlordane in single drum lots with intermediate quantities given similar adjustments. The new schedule sets carload prices at $1.50 for agricultural grade and $1.65 for refined grade and single drum prices at $1.70 and $1.85 respectively.

Joins Franklin Research

Edwin A. Weihenmayer recently joined Franklin Research Co., Philadelphia, as manager of their paper division. He has spent his entire business career with Jessup & Moore Paper Co., Philadelphia, and although he is now with Franklin Research Co., his association with Jessup & Moore will continue.

Selling Problems Discussed

The program for the October 28th meeting in Cleveland of the Commercial Chemical Development Association included among its features a talk by F. W. Lovejoy, sales executive, Socony Oil Co., New York, titled, "Selling at Times Like These." The meeting dealt with problems of expanding the market for manufactured chemicals and service to customers and was held at the Hollenden Hotel.

Attapulgus Clay Moves

Attapulgus Clay Co. and Porocel Corp., producers of fullers earths and activated bauxites, announced Oct. 8, 1947, removal of their executive, sales and general offices to 210 West Washington Square, Philadelphia.

Public Health Assn Meets

THE seventy-fifth annual meeting of the American Public Health Association and related organizations was held in October 6-10, 1947, at Convention Hall, Atlantic City, N. J. Reports of particular interests to manufacturers of sanitary chemicals were those of the committee for examination of germicides and antibacterial agents given by the Stuart Mudd, M.D., Professor of Bacteriology, School of Medicine, Univ. of Pennsylvania; and the report of the subcommittee on food utensil sanitation, committee on research and standards, by W. D. Tiedeman, Chief, Bureau of Milk and Restaurant Sanitation Investigations, New York State Department of Health, Albany.

Other papers of interest were those of Professor Walter L. Mallmann, Leo Zaikowski and David Kahler, Michigan State College, titled, "A City Department of Health Program on the Improvement of Mechanical Dishwashing"; of Professor William G. Walter, Montana State College, Bozeman, Mont., on a "Test for Detergents"; comments on "Standardization of Test Methods of Surface Active Agents" by Howard E. Lind, Sias Laboratory, Brooks Hospital, Brookline, Mass.; a paper titled "Two Years of Organized County - wide House - to - House Sanitation and Insect Control with DDT" by J. A. Willman, public health engineer, City-County Health Department, Columbus-Muscogee County, Columbus; and a paper by G. M. Ridenour, Associate professor, and E. H. Armbruster, research associate, School of Public Health, University of Michigan, on "Some Factors Affecting the Properties of Quaternary Ammonium Compounds as Sanitizers." A summary of this paper is presented as follows:

Laboratory and literature review studies have been made on quaternary ammonium type disinfectants as sanitizing agents. These studies included: (1) Comparative efficiency of several different compounds now on the market; (2) effect of (a) temperature, (b) organic matter, (c) water-soluble mineral substances and (d) hydrogen ion concentration on their efficiency; (3) the relative resistance of various type pathogens, and (4) chemical testing methods. The data would seem to allow for a few general conclusions. These are:

1. Some cationic disinfectants of the quaternary ammonium type possess sanitization properties. However, sanitization efficiency varies widely for different compounds, amounting in certain cases to a required dosage of many hundred per cent for the same efficiency under the same conditions.
2. As with chlorine, their efficiency is influenced by many factors. It increases with temperature and increases appreciably with pH above 9.0. It decreases markedly in the presence of certain types of organic matter and water mineral substances such as Ca and Mg. Other common natural water cations or anions seem to have relatively little effect.
3. Against different type pathogens, and other test organisms, *E. typhosa, S. dystenteriae, Sal. schottmueleri, Staph, aureus* and *E. coli showed* similar resistance to sanitizing endpoints. *Ps. aeruginosa and Ser. marcescens* gave relatively high resistance.
4. A single accurate laboratory and field test is available for the measuring of concentrations of most quaternaries. However, such a test is of little value since neither this general type of test nor others of which the authors are aware at the present time measures the bactericidal factor in the compounds. Since the compounds vary widely in their effectiveness, they must therefore be separately evaluated for each specific situation. Supervision of the use of quaternaries for sanitizing purposes is thus made difficult.

   Another handicap is the lack of agreement on a standardized laboratory method of testing the sanitizing efficiency of these compounds. This is especially important because of the large number of quaternaries on the market.
5. These data indicate that while potentially, the cationic type compound can be considered in the class of eating utensil sanitizers, the same degree of intelligence, based upon fundamentals, must be applied in their use. This is a little more difficult at the present time than with the chlorine type sanitizer, because this knowledge is not yet as exact or complete. There is no indication, however, that this deficiency cannot be removed through further research.
6. It might be finally concluded that, at the present time, promiscuous use of these compounds, without proper adjustment of concentrations to their specific conditions of use might be hazardous. It does appear though that where the compounds are so adjusted, their use as sanitizing agents may well be justified.

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Koppers Reports Changes

Personnel changes resulting from reorganization of the tar products division, Koppers Co., Pittsburgh, were recently announced. The operating activities of the division are now divided into three parts: planning and procurement, production, and sales. H. B. Cummings has been appointed manager of the planning and procurement department. Manager of the production department is R. C. Stromquist, who will be in charge of all division plant operations. R. R. Holmes has been appointed manager of the sales department. J. H. Carpenter is manager of the refined coal tar products section.

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Attend Labeling Course

A special course in labeling operations prepared by National Adhesives Co., New York, was presented recently before members of the packaging department of Norwich Pharmacal Co., Norwich, N. Y. The course included instructions on labeling methods, package selection, label specifications, grain determination, and humidifying stiff labels; the nature of glues, their storage and handling as well as the regulation and care of labeling machines. After the formal presentation, specific labeling difficulties were taken up in open discussion.

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Fritzsche Honors Schuster

Stanley B. Schuster, office manager of the Chicago branch of Fritzsche Bros., Inc., New York, was the guest of honor at a champagne luncheon held recently at the Palmer House, Chicago, in celebration of his 25 years with the company. The Chicago office staff, with Joseph F. Gauer, head of the mid-west branch, officiating, participated in Mr. Schuster's induction into the company's Quarter-of-a-Century Club. He is the fifth member to become eligible during 1947.

N.P.C.A. Meets, Elects Hockenyos

GEORGE L. HOCKENYOS, Springfield, Illinois, was elected president of the National Pest Control Association at the 15th annual convention at the Bellevue-Stratford Hotel, Philadelphia. The meeting began on October 27, and ended on the 29th. The new president succeeds J. Harvey Sturgeon, Louisville, Kentucky. William O. Buettner, Brooklyn, N. Y. and R. C. Yeager, Cincinnati, Ohio, were reelected secretary and treasurer, respectively.

The general theme of the meeting centered around looking ahead in the pest control business. The first day's session was opened by E. R. Jennings, New York, convention chairman. Committee reports and a business session followed, and in the afternoon five speakers discussed their ideas of the future of the pest control industry, each from his own geographical viewpoint. Speakers included Lee C. Truman, Indianapolis; Mark Weintraub, association director, Boston; Charles J. Menard, San Francisco; Herman L. Fellton, Atlanta; and Oliver Goldsmith, Waco, Texas. Dr. Alfred Weed, John Powell & Co., New York, spoke as a chemical supplier, and two entomologists, Prof. J. J. Davis, Purdue University, and Dr. George C. Decker, Illinois Natural History Survey, Urbana, Ill., also gave their views on the industry's future. S. A. Rohwer represented the U.S.D.A. in a talk.

Tuesday's sessions included a discussion of "New Arms in Pest Control," in which J. D. Williams, Springfield, Ill., and Mr. Hockenyos spoke on fly control; Bartlett W. Eldredge, Waltham, Mass., on "Sanitation and Consultation"; and Dr. John B. Schmitt, Rutgers University, on "Pests Outside the Four Walls." The latter talk discussed the possible expansion of pest control into out-of-doors procedures, such as control of agricultural pests. Other topics included water proofing, flame proofing and pigeon control.

Tuesday afternoon's program included a session on sanitation in relation to pest control. Speakers in this group included Dr. Israel Weinstein, Commissioner of Health, New York City; Robert C. Stanfill, Food and

GEORGE L. HOCKENYOS

Drug Administration; Dr. R. M. Mehurin, U. S. Department of Agriculture; Dr. James C. Munch, Upper Darby, Pa.; and Dr. Robert J. Huebner, U. S. Public Health Service.

A business session occupied Wednesday morning, with Pres. J. Harvey Sturgeon as chairman. In the afternoon Mr. Hockenyos, newly-elected president presided. Prof. H. Fringes, State College, Pennsylvania, addressed the group on ultrasonics as a possibility in pest control. A number of mechanical devices for the application of toxicants were demonstrated before the group in connection with a discussion of equipment problems under the chairmanship of Dr. A. L. Brody, New York. Speakers included Eugene J. Gerberg, Baltimore, Md., and John F. Benham, Executive Secretary, National Sprayer & Duster Ass'n, Chicago.

Social activities were numerous, highlighted by a party on Monday evening, and the annual banquet on Wednesday night, attended by over 700 persons. The convention was the largest in association history, with 622 registered. A considerable amount of difficulty was encountered by the committee due to a strike of employees at the Bellevue-Stratford. This condition made it necessary to hold social functions at the Penn-Sheraton Hotel, and also prevented a number of firms from bringing display material into the hotel. Next year's meeting is scheduled for Toronto, Canada, it was announced.

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Solubilizer for Chlordane

A new solubilizer for chlordane has been announced by Griffin Chemical Co., San Francisco. Chlordane, a dark, viscous liquid, insoluble in water and difficult to handle in low concentrations, is emulsified by "Trex 80", the Griffin solubilizer used in 50/50 concentrations. The emulsion can be readily diluted with water of any hardness to produce colloidal solutions ranging from clear to opalescent and, according to the company announcement, at any desired level of chlordane content. The solutions are said to be non-settling. Emulsions of chlordane can also be prepared by reducing the Trex 80 content. Both solutions and emulsions prepared with Trex 80 are said to eliminate phytotoxicity, odor and fire hazard of hydrocarbon solvents. Bulletin F102, on Trex 80 is available from Griffin Chemical Co., 1000 16th St., San Francisco.

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Materials Handling Show

Numerous topics of interest to the chemical industry will be discussed at the Conference on Materials Handling which will be a feature of the second National Materials Handling Exposition to be held at the Public Auditorium, Cleveland, January 12-16, 1948. The major theme of the discussion will be cost reduction through improved handling.

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MM&R Appoints Burgin

Miller Burgin will represent Magnus, Mabee & Reynard, Inc., New York, in the southwest including Texas, Oklahoma, Kansas, western Mississippi, Arkansas and western Louisiana, according to a recent company announcement. Mr. Burgin was formerly sales manager of the Bangor, Me. branch of Coca Cola Plants, Inc.

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Wanted Insecticide Sales Mgr.: for Midwestern manufacturer entering retail insecticide field. Four thousand established outlets on other products manufactured by the company. Excellent opportunity for man experienced in the sale of insecticides. Write Box 956, c/o *Soap & Sanitary Chemicals.*

Territories Open: New England — New York Proper — Philadelphia — Western New York. For experienced manufacturers agent, or individual to represent old established manufacturer, selling a complete line of floor finishing materials — sealers, waxes, cleaners and gym finish to established sanitary supply dealers. Address Box 965, c/o *Soap & Sanitary Chemicals.*

Representative Wanted: A well known soap company, manufacturing a powdered hand soap, wants a representative who calls on jobbers carrying maintenance and janitor supplies. Address Box 966, c/o *Soap & Sanitary Chemicals.*

Manufacturer's Agents Wanted: For state representation for all purpose all season line insecticides featuring D-3 Rhothane base; also exclusive proven paint insecticide additive and ready mixed insecticidal paint. Address Box 967, c/o *Soap & Sanitary Chemicals.*

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Soapmaker & Chemist: Competent. Having long experience in making of all kinds of soaps and cleaning compounds. Experienced chemical and glycerine recovery. Can take full charge of production. Address Box 958, c/o *Soap & Sanitary Chemicals.*

Chemist: Desires position. M.D. in chemistry. Experienced in fats and oils and waxes, especially no-rubbing. Address Box 961, c/o *Soap & Sanitary Chemicals.*

Positions Wanted

Manager: Nearly 20 years experience in chemical specialty field. Have handled all phases and departments for manufacturers. Address Box 959, c/o *Soap & Sanitary Chemicals.*

Resins and Waxes: Chemist with 20 years' experience in development and supervision of production of wax coatings, dry, bright wax emulsions and polishes, resin emulsions, emulsion paint, adhesives and specialty items desires responsible position with progressive organization or consulting work on a part time basis. Address Box 960, c/o *Soap & Sanitary Chemicals.*

Textile Research Chemist: Age 38. 15 years experience in the production and formula development of full boiled soaps, textile finishing oils, surface-active agents, emulsions, sizes and allied products for industrial chemical use. Salary requirement $6500 per year and bonus. Address Box 962, c/o *Soap & Sanitary Chemicals.*

Chemist: 10 years' experience in sales and manufacture of detergents for household, industrial and dairy applications. Now employed but desires change for greater opportunity. Age 35. Prefer position that combines some technical sales work with production operations. Address Box 963, c/o *Soap & Sanitary Chemicals.*

Woman Chemist with 3 years' experience in soap and wax field desires position with future. Address Box 964, c/o *Soap & Sanitary Chemicals.*

Miscellaneous

Interested in Purchasing the following equipment: one 6" or 8" Plodder; One Grinding Hog for meat scraps, bones, etc., One Rendering Cooker, either horizontal or vertical. All of the above items can be with or without motor, current specifications 220/440 volts, 3 phase, A.C. Write to Mid Pacific Soap & Supply Company, 848 South Beretania Street, Honolulu, T. H., Attention Mr. Vern Gilligan.

We Buy—We Sell—We Trade —Drugs, pharmaceuticals, solvents, chemicals, botanicals, cosmetics,—Other raw materials and supplies. Chemical Service Corp., 92 Beaver St., Hanover 2-6970, New York 5.

If You Are A Producer of raw materials used by the soap industry and would be interested in southern Ohio representation, Address Box 975 c/o *Soap & Sanitary Chemicals.*

Wanted to Buy: Well established soap manufacturing plant and sanitary supply business, or either one of them, prefer within a radius of 100 miles of Cincinnati, Ohio. All details must follow in first letter. Address Box 974, c/o *Soap & Sanitary Chemicals.*

Agency Wanted: Canadian soap manufacturer with excellent sales coverage of Central, Eastern and Northern Canada desires agency for toilet soaps and other lines of cleansers and detergents. Address Box 973, c/o *Soap & Sanitary Chemicals.*

For Sale: Offered subject to prior sale approximately 800 bags pacific crystals chemically identical with sesquicarbonate of soda crystals, physically a finer crystalline structure. Also 18,600 lbs. granular borax. Advise best offer. Address Box 968, c/o *Soap & Sanitary Chemicals.*

For Sale: 15,000 lbs. or any part thereof pure, technical grade DDT powder packed in 5 lb. tins—6 tins 30 lbs. to carton. Minimum setting point 89 degrees. Price 35c per lb. in 5,000 lb. lots or more. 38c per lb. in 1,000 lb. lots. 42c per lb. in 90 lb. lots or more. Address Box 969, c/o *Soap & Sanitary Chemicals.*

For Sale: 1—Toilet soap wrapping machine for 1½ to 3½ oz. cakes. 2—Foot soap presses. 1—Day dough mixing machine, capacity 1200 lbs. Address Box 970, c/o *Soap & Sanitary Chemicals.*

For Sale: 1—Zaremba 500 sq. ft., single effect Copper Evaporator; 1—3500# soap crutcher; 1—Lehman 5 roll steel water cooled refiner. 20"x48"; 3—soap powder fillers; 10A Blanchard Soap Mill. 2—Mikro Pulverizers, Bantam 1SH; 18—Shriver Filter presses, 30" to 36" cast iron; pumps; etc. Send us your inquiries. Brill Equipment Company, 225 West 34th Street, New York 1, N. Y.

Will Purchase Immediately— Pneumatic Packaging Machine, used for chips, powder, cleanser; also dry mixers, chip dryers, crutchers, and automatic soap press. Address Box No. 971, c/o *Soap & Sanitary Chemicals.*

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Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

Tale Ends

PEPSODENT'S "Irium" now has a young brother, Rinso's "Solium" which has been introduced to the world with the customary excellent Lever merchandising technique. Good luck, Solium, old Kid!

* * *

Thinking of Lever, reminds us that their very active prez, Chuck Luckman,—right now very much in the news and up to his ears in food problems in Washington,—in a list of his current reading,—published in *The Saturday Review of Literature* recently to show what well-known public figures are reading,—named our *"Modern Soap Making"* by Thomssen and Kemp on his list of ten books. Needless to say, our book found itself in some very fast company!

* * *

Speaking of "Modern Soap Making," a fellow walked in here last week and tried to bribe us to sell him a copy for $20 cash. (The original price of the book was $7.50). Sad indeed was he,—and us too,—when we said that we would be delighted to accept his bribe, but there wasn't a copy to be had,—and there hadn't been for two or three years. Its sequel should be ready about a year hence.

* * *

Again about books,—NAIDM officers have been busy taking bows on the recently issued NAIDM Compilation of Economic Poison Laws,—a beautifully complete 550 page looseleaf job authored by John Conner, Washington attorney. Congrats from us too, boys! A tough job well done!

* * *

If insects and rodents didn't destroy about a jillion tons of food every year, think of all the food we wouldn't have to save to ship to Europe!

* * *

Ever see Big Bill Buettner, Nat'l Pest Control secy, in action at one of their meetings? A dynamo on roller skates, talking on three subjects to four people at once, toting a twenty-pound brief case and always chewing on a big cigar. It makes us dizzy just to watch him!